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—The giant of a nation's creed,
Prepared—
Lest we be in another's greed
Ensnared—

Rock Island Arsenal viewed from the air. Roofs of new Artillery Vehicle Storehouses in foreground at left.

War's Greatest Workshop

ROCK ISLAND ARSENAL

HISTORICAL, TOPOGRAPHICAL AND ILLUSTRATIVE

Its proven usefulness and limitless possibilities in time of peace as well as when put to the test

---

Its romantic origin, its unimpregnable isolation, its limitless water power, its gradual development, its fulfillment of the prophecies of its various administrative officers, its magical response to the exigencies of war.

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1922

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ACKNOWLEDGMENT

The publishers of this work wish to make grateful acknowledgment to Col. D. M. King, Commandant at Rock Island Arsenal, to Col. Harry B. Jordan, his immediate predecessor, to Mr. H. L. Noth, administrative assistant at the Arsenal, to Mr. John H. Hauberg, author of the chapter on early Indian history, and to others, for invaluable co-operation and courtesies extended in connection with the collection of data and the preparation of material for publication, and also for the privilege of reference to Mr. B. F. Tillinghast's admirable work, "Rock Island Arsenal in Peace and War", and to Col. D. W. Flagler's historical records of the earlier days of the Arsenal.

Maj. Gen. C. C. Williams, Chief of Ordnance

Foreword

IN LAYING the ground plan for this story of Rock Island Arsenal, the desire has been to weave into the fabric of material fact something of the spirit of romance which is so intimately connected with its history. So, in the background of the picture, as viewed through the long vista of the years, will be seen the Indian wigwams of a vanished people, the heroic figure of Chief Black Hawk, the grim outlines of old Fort Armstrong, on a strategic point of the Illinois shore, and glimpses of the Mississippi river, dotted with the war canoes of the Sacs and Foxes. It is true that these things relate to a time far remote, but they belong in the picture, nevertheless.

The building of Fort Armstrong in the year 1816, as a frontier post of the United States army, is very properly regarded as the starting point in the History of Rock Island Arsenal, and as the opening of the four periods in which its story may be told. Col. Lawrence superintended the fort's erection, and he was retained on the Island in command of the Eighth U. S. Infantry. This may be classed as the first epoch in the history of the Arsenal.

In the second period of Arsenal history—that of development—it made rapid strides under Gen. T. J. Rodman and Gen. D. W. Flagler, embracing the time covered by and immediately subsequent to the Civil War.

During the third period the Arsenal had its first real test of usefulness in the Spanish-American War, when Col. Stanhope E. Blunt was commandant, and justified every hope of its founders. Succeeding Col. Blunt was Col. Hobbs, now deceased.

Then came America's entrance into the World War, in early April, 1917, with the Arsenal during this period first in charge of Col. George W. Burr, and then of Col. Leroy T. Hillman. Its activity during this time, which may be called the fourth period in Arsenal development, is a matter of history that finds no parallel in the world's annals, and at the time the publication of this work was undertaken Rock Island Arsenal was the center of post-war activities under Col. Harry B. Jordan, as commandant of the Arsenal, later succeeded by Col. D. M. King in the same position.

As in modern journalism it is the custom to chronicle at the head of a story the big event, and to lead with it, although it may in reality come last in chronological order, so the publishers of this volume deem it proper to feature in the opening chapters the remarkable part played by Rock

Island Arsenal in the World War. In that struggle this great military establishment fully demonstrated to the nation its supreme importance in meeting the exigencies of armed conflict.

Briefly, then, this may be said to be the outline of the manner in which the history of Rock Island Arsenal is covered in the story here presented to the public. The results achieved for the nation in the face of the gravest crisis the world has ever seen are in themselves the best arguments for the continued support by congress of this great military plant. The matter of location alone gives the Arsenal that pre-eminence which was recognized by General Ramsey, United States Chief of Ordnance, in 1864, when in his report to the War Department he said:

"After a careful study of the question of location, there is no position which, to my mind, affords so many advantages, and at the same time presents so few objections, as Rock Island, in the Mississippi river."

For many years its possibilities had been recognized by a few who foresaw the part that location, manufacturing resources, distributive facilities, and other factors might be made to play in a great national emergency. Only the stress of actual war, however, could bring it the general recognition that it always had deserved. When the gate of circumstance opened it was revealed as the key to the military strength of the United States, and its rapid development was promptly provided for. Not only was the manufacturing plant greatly expanded, but storage facilities were multiplied many times over, so that now, in time of peace, it is enabled to shelter complete equipment, immediately available, for an army greater than was even thought of before the World War.

Besides being always ready to resume manufacture of war material at full capacity within a few weeks, this Arsenal is supplied with standardized tools and patterns designed to quickly transform many privately-owned industrial plants from a peace to a war basis. Thus the foresight of the founders has been fully vindicated.

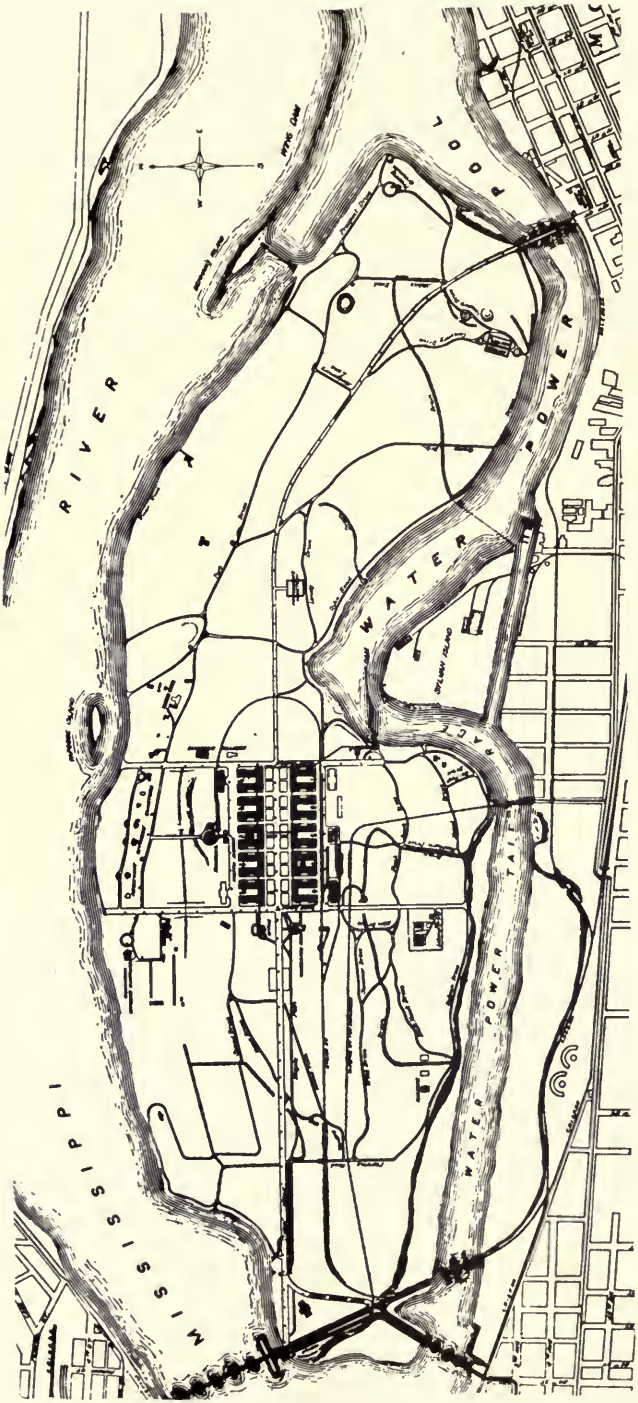
And so, in the telling of this story, the last shall be placed first, giving priority to that which transcends all that has gone before. The European struggle supplied the acid test of the great Arsenal established by the United States on the Mississippi river at Rock Island, Illinois, and opposite the city of Davenport, Iowa, in 1862, and therefore deserves first consideration in this volume.

Indicative of and bearing out the importance of this mid-western military establishment, the official records show that from the day the United States entered the World War, on April 7, 1917, until the Armistice was signed, on November 11, 1918, the government authorized the expenditure at Rock

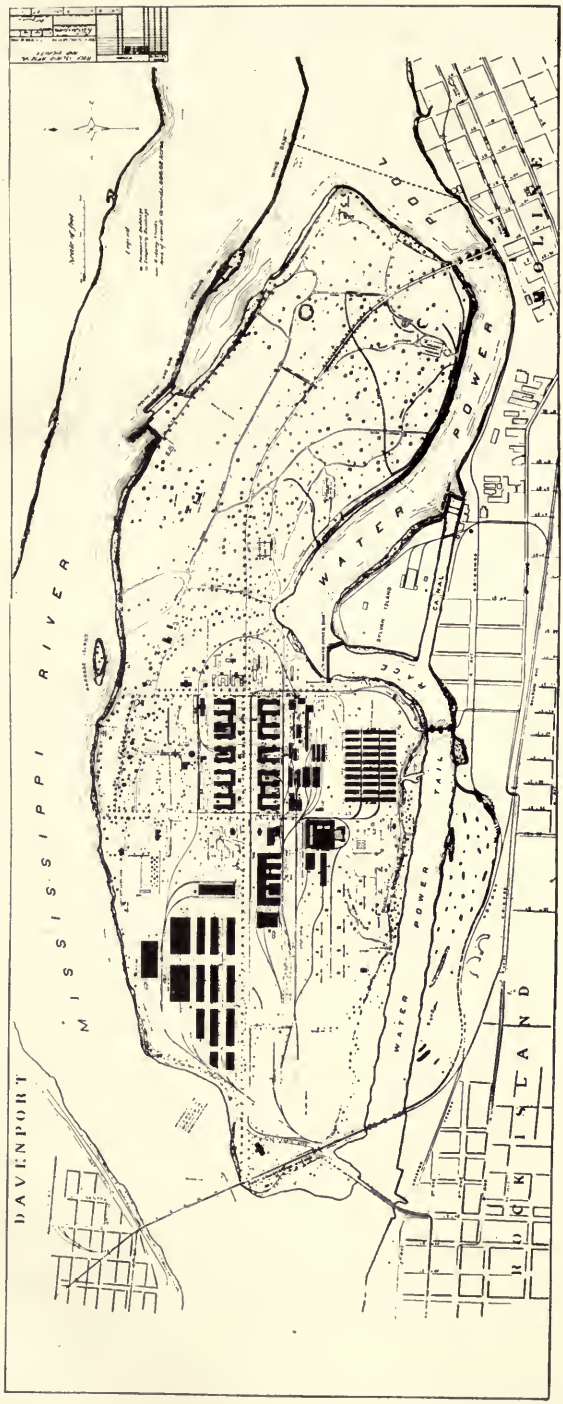
Island Arsenal of $108,955,974.07. Of this amount, due to the cessation of hostilities, $19,612,133.48 was revoked, leaving an actual expenditure of $89,343,840.59 by the Arsenal during the period of the war. In the total expended in this period, $66,526,540.31 was devoted to the manufacture of war materials and purchases for this purpose, this item also including $17,-120,515.51 for labor; increased facilities, new machinery, alterations and new buildings, $17,341,487.69; storage, temporary barracks, guard houses, and other incidental buildings, $3,915,812.59; and Savanna, Illinois, proving grounds, $1,560,000.00.

With the problem of reducing armament receiving the earnest consideration of the nations, and indications pointing to the ultimate adoption of a policy of material retrenchment in military expenditures, the question naturally arises as to the probable effect upon future activities at Rock Island Arsenal.

Main entrance gate at west end of Island.



MAP OF ROCK ISLAND ARSENAL.
Showing location of buildings at beginning of World War.



MAP OF ROCK ISLAND ARSENAL BROUGHT UP TO DATE.

Comparison of this map and the one on the preceding page reveals the immense expansion of buildings that took place during the World War.

Location and Advantages

ROCK ISLAND ARSENAL occupies an island in the Mississippi river lying on the Illinois side of the channel between Rock Island and Moline, Ill., and Davenport, Iowa. The tract comprises 896.62 acres of almost level land, all but a small part lying well above high water mark. The name was derived from the island's bed of limestone, into which the stream has cut on all sides, leaving projecting ledges exposed to view. This stone not only adds a picturesque effect, but lying near the surface, it furnishes an ideal foundation for the heavy construction required in an institution of this kind. The natural beauty of the spot has been commented upon from the days of the earliest white settlers. It is exceeded at but few points in the middle west.

Being located on an island used almost exclusively for its purposes and all owned and controlled by the War Department, the Arsenal is set apart by nature from the surrounding community and is easily guarded and singularly free of danger from machinations of enemy agents in time of war. Its central location is of the utmost strategic value, since it is practically inaccessible to an outside enemy from any possible point of invasion, and it is in position to forward military supplies with equal facility to all national frontiers, east, west, north, south. Its transportation resources include three great railroad systems that spread a network over the middle section of the country, with through service to the Pacific and direct connections to the Atlantic and Gulf coasts. These systems have several local branches and there are, in addition, lines tapping two other trans-continental systems crossing the river within a radius of 50 miles.

Water transportation facilities are exceptional, including the great Mississippi and its navigable branches, giving access to the Gulf of Mexico and much of the interior of the country, and canal connections, about to be much improved, opening the way to the Great Lakes and thence out to the sea.

Location of the Arsenal, in short, is such that manufacturing may be conducted and war equipment stored with a minimum risk, while, when need arises, supplies may be distributed to all parts of the country with a maximum of efficiency and speed.

The Arsenal is practically a complete unit in meeting the nation's military needs. Its storehouses contain everything, with a few exceptions, that the soldier uses in modern warfare, and its shops make the vast

majority of the articles included. At no other place in the country is the variety of production so broad and the output so extensive, when in full operation.

As far as it is practicable to make it, the Arsenal is independent of the civil community surrounding it. It has its own water power plant, which is sufficient for ordinary needs. In an emergency it can buy power in any quantity. There is also boiler capacity on the island sufficient to meet present requirements, and wanting only installation of engines and electrical equipment. Development of the water power has been largely incidental with the government project for the improving of the Rock Island rapids for purposes of navigation. The hydro-electric plant has a rated capacity of 4,400 horse-power, while the eight steam boilers are capable of developing 4,000 horse-power. The Arsenal has its own water and sewer systems and a complete and modern fire fighting equipment, manned by experts. Shipping facilities include no less than 15.6 miles of railroad track, covering the shop and storehouse districts and giving means of quick and economical handling of all materials. There are 23 miles of of wagon roads, 9.4 miles of which are permanently improved. There are quarters for the housing of officers and enlisted men, a hospital, cafeteria and buildings for recreation and welfare work among both service men and civil employes.

Facilities for testing field equipment made and assembled at Rock Island Arsenal were made complete by the purchase and improvement of an extensive tract for proving grounds. These lie near Savanna, Ill., 60 miles north. The project was begun in 1917, and includes large storehouses, erected since the World War, and used for housing vast quantities of the heavier kinds of war material.

Rock Island, Illinois, is the Arsenal postoffice, and express, freight and telephone business is also handled through that city.

Valuations placed upon the Arsenal, its equipment, and material stored there run into large figures. Here are the latest estimates under the headings given:

Permanent buildings	$ 18,005,730.00
Temporary buildings	304,795.00
Machinery and equipment	19,627,709.00
Railroad trackage (including bridges)	3,571.500.00
Roads and walks (including bridges other than railroad)	300,000.00
Grounds (including all fences and improvements)	4,000,000.00
Sewer and water distributing system	1,301,600.00
Light, heat and power distributing system	1,457,000.00
Military stores	299,235,384.00
Stored raw material	11,485,132.00
Total	$359,288,850.00

Record During the World War

NO adequate idea of what Rock Island Arsenal accomplished during the World War can be gained from mere statistics. Neither can the record of any one department, nor, indeed, of several departments, be taken as indicative of the extent of the aid given the government in its military effort. To start with, the new methods of fighting and the vastly increased scope of activities involved—all coming with such surprising suddenness—found the Arsenal, like the rest of the country, laboring under the handicap of unpreparedness. New machinery and tools, new manufacturing specifications, were required, and new buildings were needed to meet the necessity of immediate expansion. Under the fearful pressure of a great emergency activities were begun or speeded up in a myriad of directions. With all possible haste the force of workers was increased, ultimately reaching ten times the number

Bottling destruction in the form of molten trinitrotoluol, which is being poured into howitzer shells.

employed normally before the war. Leaders were selected from among the experienced and skilled artisans already engaged in Arsenal production, and thus was created the nucleus of the augmented organization.

Supplies already on hand and constantly being received from various sources were distributed, experimental work conducted, standardized tools made and forwarded to private manufacturers to enable them to turn out war material, schools of instruction for workers in private factories and also for soldiers untaught in the use of modern weapons were organized, contracts let for a vast expansion of manufacturing and storage facilities at the Arsenal and a great deal of other work undertaken with the least possible delay.

Obviously, it was impossible for maximum shop production to be attained at once in all lines of work, and so the total output during the war of some varieties of finished work may seem small. That, however, is of minor importance. The significant fact is that the Arsenal was the key to a great part of the military production of the country, organizing and directing it and supplying its standards. Deprived of its aid, the country would have required much more time than it took to get on a war-producing basis. As a result of what was done during and immediately after the war, the Arsenal is relatively much better fitted than ever to cope with any similar situation that may develop in the future.

In the absence of anything more impressive to show how production was accelerated, it is necessary to resort to figures relating to expenditures and number of employes.

Analysis shows that during the period from August, 1914, when the European nations began fighting, until April, 1917, when the United States

Loaded shells in the shipping room, ready to be issued to the army.

entered the struggle, the total expenditures at Rock Island Arsenal was $11,759,935.90, of which purchases amounted to $7,115,849.53 and labor $4,644,086.37. The average monthly expenditure during this period was $222,370.29 for purchases and $145,127.69 for labor, or a total average expenditure for each of the thirty-two months preceding the entry of the United States into the war of $347,497.98.

But in striking contrast to these amounts are the figures for the period this country was in the war. The total amount then expended for purchases and labor was $58,587,390.18, and this was divided thus: Purchases, $42,466,874.67; labor, $17,120,515.51. The average expenditure per month was $3,077,861.05, and of this average $2,193,536.91 was for purchases and

$884,324.14 for labor. It must be understood, however, that these figures are for the manufacturing department of the Arsenal, and do not include the huge sums expended for labor and material by the construction companies at work there.

For some time prior to the outbreak of the World War in 1914, the employees at Rock Island Arsenal totaled approximately 1800 men and 175 women, the latter all office workers, typists and stenographers. From that time until the spring of 1916 there was little tendency to increase the number of workers, but the disturbance on the Mexican border started increased activities at the Arsenal, and by July 1, 1916, there had been added to the force about 100 men and 25 women, the latter still being confined to clerical positions. From then until the United States entered the war, employees were added at the rate of about 200 per month, and on April 6, 1917, there were employed 3,600 men with 300 women office workers.

High speed and maximum production then became the watchword, and employees were added at a rate close to 250 or 300 each month. On December 31, 1917, the total was 6,100 men, and 375 women office workers; and on May 31, 1918, this total was increased to 8,926 men, and 450 women office workers. As a new departure, about 100 women shop workers had also been employed. The first of these were taken on May 20, 1918, and when the Armistice was signed somewhere near 1,500 women were employed in the shops.

The following table shows the increase in the number of employees during the war period:

	Men	Women
August, 1914	1,800	175
July, 1916	1,900	200
April, 1917	3,600	300
January, 1918	6,100	376
May, 1918	8,926	450
July, 1918	10,268	572
August, 1918	11,244	722
September, 1918	11,899	902
October, 1918	12,342	1,227
November, 1918	13,361	1,417

Succeeding chapters deal in order with the detailed record of production during the war, the construction program made necessary by the war's demand, manner in which workers were found and trained, the military personnel and means taken to guard the Arsenal.

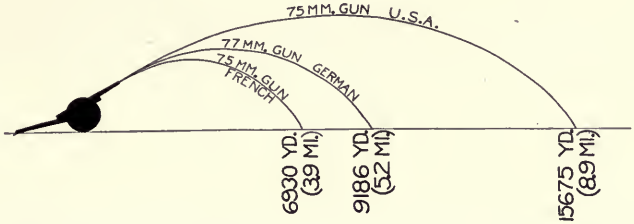
AMERICAN ARTILLERY THE MOST EFFECTIVE IN THE WORLD

Artillery developed by the United States Army Ordnance Corps, like the small arm, has no equal in range and effectiveness. This was true during

the World War, and it is true today. Comparisons that may be readily comprehended are presented in the accompanying diagrams. Range of guns of American, French and German make used during the war, and approximately equal in bore and weight of projectile, are shown in light, medium and howitzer types. Development of the American gun as represented in the 1920 4.7 model over the 1906 model, which was the best we had during the war, is also indicated. Carriages and other equipment for all the American guns included are made and assembled at Rock Island Arsenal.

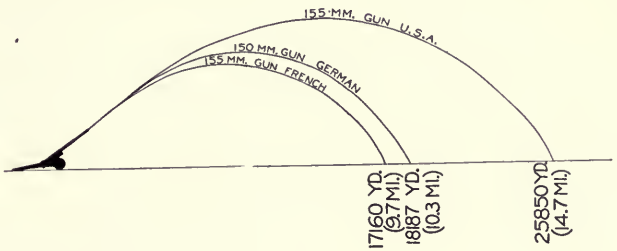
COMPARISON OF LIGHT FIELD ARTILLERY

Weight of projectile—U. S. gun, 15 pounds; French gun, 12.2 pounds; German gun, 14.96 pounds.



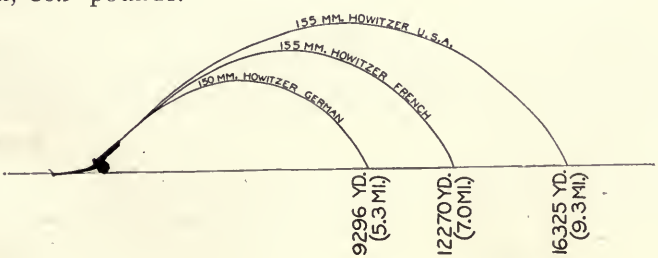
COMPARISON OF MEDIUM FIELD ARTILLERY

Weight of projectile—U. S. gun, 95 pounds; French gun, 95 pounds; German gun, 86.9 pounds.



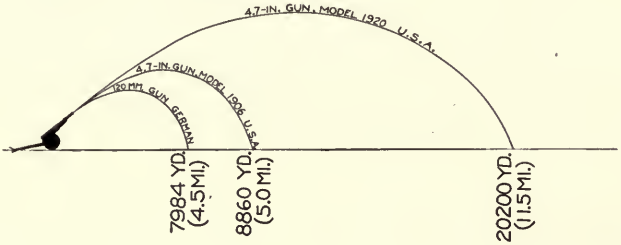
COMPARISON OF MEDIUM HOWITZERS

Weight of projectile—U. S. gun, 95 pounds; French gun, 95 pounds; German gun, 86.9 pounds.



DEVELOPMENT OF UNITED STATES FIELD GUN

Weight of projectile—U. S. model 1906, 45 pounds; U. S. model 1920, 50 pounds; German gun, 36 pounds.



Storehouse W-I above, and group of original shops below, contrasting new and old types of construction.

Main Items of Production

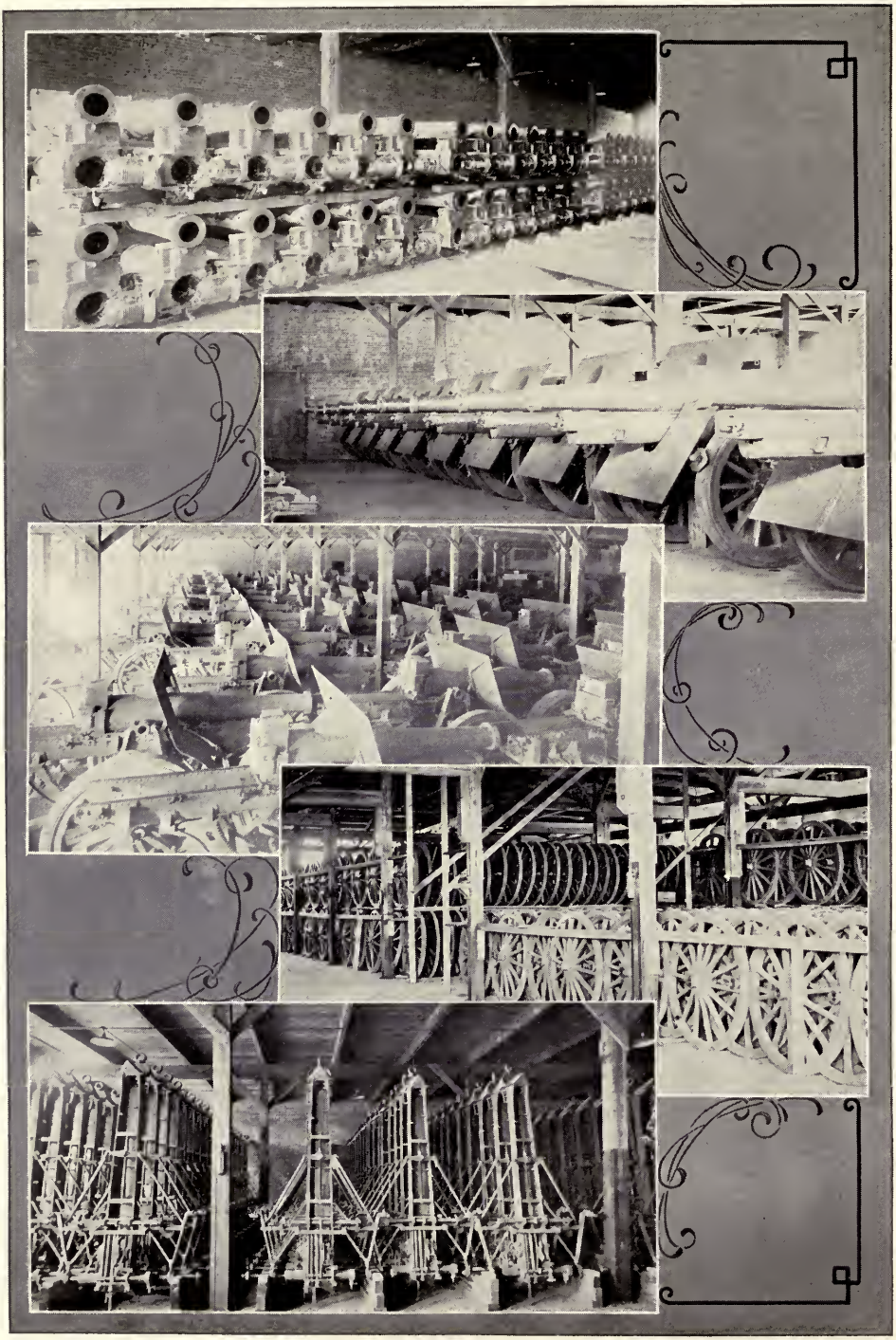
PRINCIPAL articles manufactured at the Arsenal during the war were artillery vehicles, recoil cylinders, artillery wheels, spoke shoes and spoke shoe plates, artillery harness, arm repair chests, rifles, loaded shells and personal equipment items, in addition to test tool sets furnished to other manufacturing firms throughout the country.

The harness manufacturing department was the greatest and most completely equipped in the world. Up to August 1, 1918, all the artillery harness supplied to the United States forces was manufactured here. Between April 6, 1917, and November 15, 1918, 24,212 sets of artillery harness were manufactured and 74,207 sets were assembled. In 1920 the harness department was taken out of the hands of the Ordnance Department and placed in charge of the Quartermaster's Department, making necessary its removal from this Arsenal. It was transferred to the depot at Jeffersonville, Indiana. With the coming of motorized artillery and transport, use of harness and saddles has come to play a relatively unimportant part in army equipment.

Manufacturing of rifles was one of the principal industries at the Arsenal. During practically the entire period in which this country was involved in hostilities 3,500 men and women were employed in the small arms plant. In that time there were manufactured or furnished as repair parts an equivalent of approximately 113,670 rifles, model of 1903. High water mark was reached in October, 1918, when parts sufficient to make 30,455 complete arms were made.

In round numbers, 790,000 complete sets of personal equipment for the soldier were produced during the period of hostilities. The largest single item was bacon cans, 1,512,190 of them. There were included 354,770 knives, 649,457 canteen covers, 858,344 haversacks and 400,256 pack carriers.

Among the larger items of production in heavier ordnance stores were 159 75mm. gun carriages. Unofficial reports also include 194 4.7-inch gun carriages, six 3-inch gun carriages and two 6-inch howitzer carriages. Gun caissons made numbered 121 and gun and forge limbers 446. There were also 255 battery and store wagons turned out. This Arsenal furnished to the Supply Department and to various other manufacturing concerns 264 4.7-inch recoil cylinders, complete. The supply division and outside contractors received from the Arsenal during this time 9,718 artillery wheels, all of which were manufactured here. The same disposition was made of 218,650 spoke shoe plates, also produced at this place.



Acres and acres of storehouses are packed with guns and carriages, the lighter parts being racked up in tiers several deep.

There were manufactured and assembled during the period of hostilities 13,241 arm repair chests, and 167,195 155mm. howitzer shells were loaded, without adapters and boosters.

In March, 1918, two 75mm. gun carriages were manufactured. The same number was turned out in April. In May production increased to sixteen, in June to twenty, with twenty-two in July, twenty-three in August, twenty-eight in September and forty-six in October. The 4.7-inch gun carriages reached maximum production in September, when fifty-eight were manufactured. Out of 194 which had been made at this Arsenal after the declaration of war, 183 were turned out after January, 1918.

A comparative statement of production at this Arsenal during the last year of the war indicates that at the time the armistice was signed the establishment was just reaching a point where maximum production could be attained.

Reduced to figures, the expenditures made at Rock Island Arsenal and the work done during the war may be summarized as follows:

Appropriated for Arsenal	$108,955,974.07
Revoked	19,612,133.48
Spent at Arsenal during war	89,343,840.59
Purchases and making war materials	66,526,540.31
Paid to labor	17,120,515.51
New buildings, machinery, etc.	17,341,487.69
Spent on Savanna Proving Grounds	1,560,000.00
Average monthly expenditure	3,077,861.05
Number of employees August, 1914	1,975
Number of employees, July, 1916	2,100
Number of employees November, 1918	14,778
Number of French 75mm. gun carriages made	159
Other gun carriages made	202
Forge limbers made	446
Battery and store wagons made	255
4.7 recoil cylinders completed	264
Artillery wheels made	9,718
Spoke shoes and spoke shoe plates	218,650
Sets artillery harness made	24,212
Sets artillery harness assembled	74,207
Arm repair chests	13,241
Rifles, Model 1905, made	113,670
155mm. howitzer shells loaded	167,195
Bacon cans made	1,512,190
Knives made	354,770
Canteen covers made	649,457
Haversacks made	858,344
Pack carriers made	400,256
Subscribed for bonds and war charities	$4,000,000.00

In addition to the usual work of the Arsenal involving the manufacture and issue of stores, there devolved upon it at the outbreak of the war new duties in connection with the education of prospective bidders on ordnance

materials. The heavy demands made upon the government for equipment occasioned by the rapid mobilization of troops necessitated the placing with private manufacturers contracts for large quantities of personal and horse equipments, with the manufacture of which the great majority of contractors were unfamiliar. At the time the first contracts were placed over 600 persons, representing over 200 firms engaged in various activities, received information at the Arsenal in person pertaining to ordnance material. These firms were furnished over 1,000 samples and more than 20,000 drawings, route sheets, assembly charts, etc., to aid them in the manufacture of the equipment called for under their contracts.

Various schools, known as the Motor Instruction Section, Supply Section, American Ordnance Base Depot in France, and Machine Gun Section,

WALNUT FOR GUNSTOCKS IN STORAGE.

A survey was made by the War Department while hostilities were in progress to discover all available sources of supplies of walnut. Seasoned walnut in quantities sufficient to equip millions of rifles is now on hand at Rock Island Arsenal.

were established at the Arsenal, to which were assigned many officers and enlisted men for the purpose of receiving instruction in various duties to fit them for work in the field or at the front. The number assigned throughout the year varied, averaging, approximately, 1,200 enlisted men and 150 officers.

Aside from the actual work in the shops for the production of war material, employees of Rock Island Arsenal hung up a record for war

service that has not been surpassed by any manufacturing plant in the country in proportion to size. After the declaration of war they subscribed the enormous sum of $4,000,000.00 to the various war charities and to the Liberty bond issues. The bonds, of course, constituted the principal investment of the workers, sales totaling $3,050,000.00. The Red Cross campaigns netted more than $11,000.00, the Salvation Army $10,000.00 and the Allied war drive 20,000.00. The sale of War Savings and Thrift Stamps, of which no record has been kept, brings the total well over the four million mark.

Commandant's Headquarters.

Vast Program of Construction

ROCK ISLAND ARSENAL was literally transformed by construction projects undertaken immediately prior to, during, and just following the period in which this country was involved in the World War. One familiar with the premises before that conflict would scarcely recognize them after the work was completed. All construction was done under high pressure, but most of it was of a permanent character and detracts nothing from the impression of durability, as well as of architectural beauty and practical utility which the institution always has given the visitor.

Several months before this country actually declared war, congress, yielding to the urgent recommendations of the War Department, provided for some minor extensions of the Arsenal plant. This work was only fairly started when the country entered the struggle, and from that time until after the close of hostilities the Arsenal grounds were literally alive with construction forces of every description, and new structures sprang up as if by magic. Work was done under contract, some on a lump sum and some on a cost plus basis, with the exception of a number of storehouses built by the Arsenal organization after the close of hostilities and needed to shelter the immense quantity of war material returning from the armies in France and from the training camps in this country.

Much additional shop room was needed, and, all told, the additions to the plant amounted to more than one and one-half millions of feet of floor space, costing more than seven millions of dollars. Chief among the new structures built for manufacturing uses were the artillery vehicle plant and the artillery ammunition assembling plant. The former consists of a main erection shop 120 x 605 feet, with three wings, each 80 x 200 feet, and all four stories high. The latter is 360x400 feet, in three sections, one three stories, one two and the other one story in height. The ammunition assembling plant cost $2,093,000 and the artillery vehicle plant $2,225,000. Both are of reinforced concrete construction.

As output increased, storage space, both for raw material and completed goods, became totally inadequate, and steps were taken at once to supply the deficiency. All told, nearly one and one-half million feet of additional floor space were provided at a cost of more than three millions of dollars. Chief among these projects were thirty ammunition storehouses, each 50 x 200 feet, and costing together $490,000; eight vehicle storage buildings aggregating 452,500 feet of space and costing $865,000, and what is designated as Storage Building W-I, which is 140x540 feet, six stories high, and cost $1,560,000.

Of course much miscellaneous construction was necessary. A central steam heating plant was built at a cost of $610,000. The hydro-electric plant was enlarged and modernized at a cost of $748,000. Additional barracks, offices, a cafeteria, hospital and other buildings, mostly of a temporary character, were provided.

The chronological order in which the various projects were undertaken, names of contractors and other information in connection with them are summarized in the following:

BUILDINGS AND PROJECTS SINCE 1916

In the fall of 1916 a high steel tank for the water supply of the Arsenal was started by the Rock Island Bridge and Iron Works, but little was accomplished before the next year, in February, when work was resumed. The tank was completed November 22, 1917, although its use began on September 25, 1917.

Shop M, one of the largest of the new buildings, viewed from front and rear.

January 8, 1917, a lump sum contract was awarded to the Heman Construction Company, of St. Louis, for the erection of seven nitrate and eight ammunition storehouses. These have stuccoed tile walls, steel trusses, slate roofs, concrete floor and platforms and also necessary trackage. Work

started February 12, 1917, and on February 1, 1918, it was turned over to the Stone & Webster Corporation, then engaged on other work on the Island. This work was completed June 12, 1918.

About this time a temporary wire fence was erected around the Arsenal shops, this work being installed by the Outside Department of the Arsenal.

January 6, 1917, a lump sum contract was awarded Lovell & Co., of Minneapolis, Minn., for the erection of one vehicle storehouse (now designated as Storehouse "I"), a concrete and steel construction building. This was completed November 23, 1917.

April 14, 1917, the St. Paul Foundry Co. started work on an addition to the steel lumber shed, let under a lump sum contract and completed December 5, 1917.

April 16, 1917, the Ammunition Assembling Plant (Shop "M"), a reinforced concrete structure, was started by the Westinghouse-Church-Kerr Company, New York, on a cost plus 10 per cent basis. This work included, also, 13 storehouses for explosives, a T. N. T. loading building, incinerator, railroad trackage and roads. These buildings were partially occupied on February 9, 1918, and beginning about February 15, 1918, a battalion of the Tenth U. S. Infantry was temporarily quartered in the ammunition assembling building, temporary plumbing having been installed in the same. Other buildings erected by the Westinghouse-Church-Kerr Company were:

Temporary Barracks "B"	begun	9-24-17,	completed 11-27-17
Temporary Barracks "C"	begun	12-17-17,	completed 1-15-18
Storehouse "BA"	begun	10-23-17,	completed 11-30-17
Dry Kiln (Wheel Stock)	begun	11- 5-17,	completed 11-30-17
Dry Kiln (Gun Stock)	begun	12-12-17,	completed 7- 1-18
Temporary Garage and Testing Labratory	begun	2-15-17,	completed 4- 4-18
Post Exchange and Y. M. C. A.	begun	4- 1-18,	completed 4-23-18

This firm also installed the plumbing in the present Shops "B", "D", and "F", which was completed August 10, 1918.

May 9, 1917, Henry Kohlsaat started work on a non-commissioned officers' quarters, of brick and wood.

The building of the assembling plant by the Westinghouse-Church-Kerr Company necessitated the relocation of the street car track by the Tri-City Railway Company, started June 12, 1917, completed October 31, 1917.

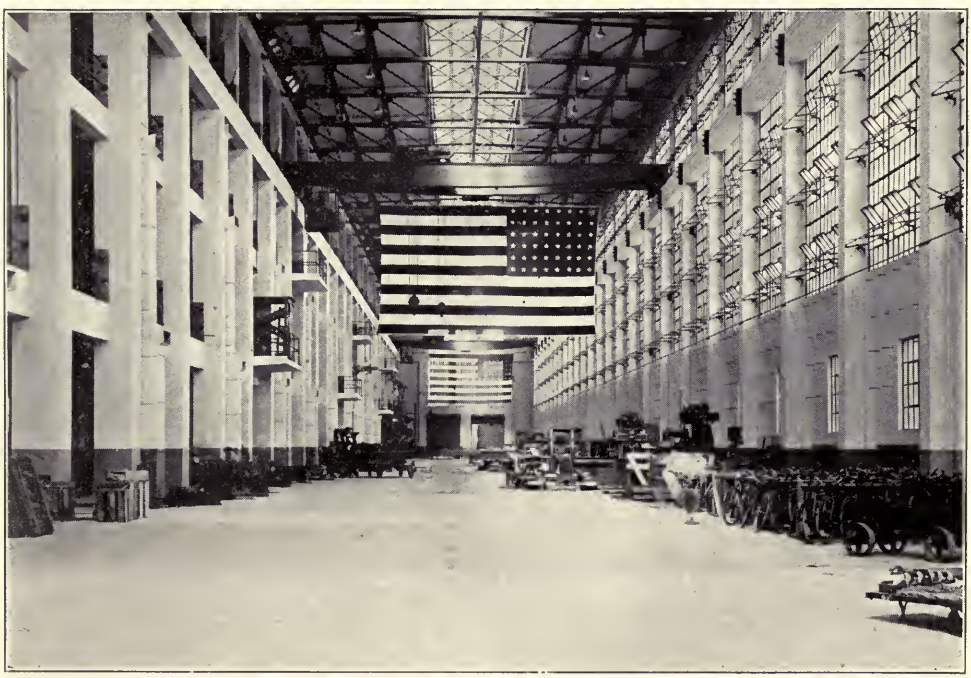
Barracks "A", started June 17, 1917, was completed July 17, 1917. This work was done by Arsenal forces. This building was later transformed into a hospital for enlisted men.

June 21, 1917, Stone & Webster started building operations for the Field and Siege Building (Shop "M"), a reinforced concrete structure, on

the cost plus 5 per cent basis, and made a record-breaking time in progress, completing the work August 15, 1918. The building was partially occupied December 19, 1917. This project includes a duct line from the old tunnel to building. Other buildings built by Stone & Webster are:

B-D Connection	Started 7- 1-17, completed 5-24-18
G-I Connection	Started 9-17-17, completed 6- 1-18
H-K Connection	Started 10-24-17, completed 5-24-18
A-C Connection	Started 11-24-17, completed 7-14-18
Central Heating Plant	Started 7-21-17, completed 7-31-18
Boilers placed	Started 11-28-17, completed 7-31-18

All these buildings were fire-proof construction, and the connections were all stone faced to match the present Arsenal shops. August 15, 1917, the first nitrate was shipped to this post, and this was unloaded by Stone & Webster into an old storehouse, and later, by the same firm, unloaded by trucks and chutes into the nitrate storehouses started by the Hemen Co. and completed by Stone & Webster June 12, 1918.



Typical shop interior, being the craneway in the field and siege building.

The Stone & Webster Co. also installed a new floor on the Moline bridge, September 7, 1918, to September 22, 1918; built the Plating and Tinning Shop, of fire-proof construction, starting March 18, 1918, completing August 1, 1918; Storehouse "MA", started December 13, 1917, and completed April 9, 1918; Gun-Stock Dry Kiln addition, started June

24, 1918, and completed December 3, 1918. This company also repaired stone cornices, remodelled old coal shed into a paint shop, and did considerable plumbing and heating in all shops from time to time.

The contract for the erection of an Ice Making Plant was awarded the Frazier & Davis Co., of Rock Island, on a lump sum contract; started June 17, 1917, finished October 4, 1917. This company later installed a new filtration bed, sedimentation basin, etc., on a lump sum contract, starting March 11, 1918, and finishing August 8, 1918. They also placed new gas mains at various points, starting May 15, 1918, completing August 6, 1918; remodelled the front of the fire station, starting August 15, 1918, completing October 15, 1918, placing a new sidewalk and driveway in connection therewith.

On June 25, 1917, the Arthur Neuman Co., of Des Moines, Iowa, started an addition to Stone Barracks on a lump sum contract, finishing May 15, 1918.

The Central Engineering Co., of Davenport, Iowa, was awarded a contract for sub-structure of the addition to the Water Power Dam, on a unit price basis, started July 31, 1917. They were later awarded a superstructure of brick and steel construction on a lump sum basis, started August 5, 1918, completed December 2, 1918. They later contracted for taking out the old cofferdam and old dam.

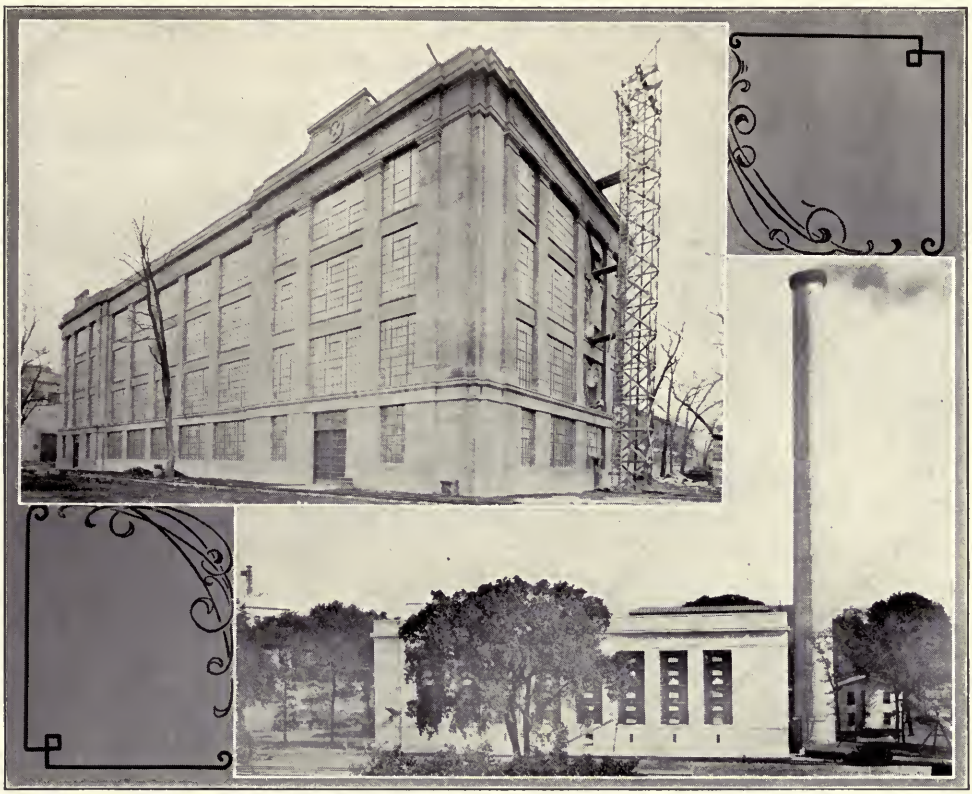
On February 18, 1918, the Walsh Construction Company, of Davenport, Iowa, started on several projects under a cost plus 7 per cent contract:

Office Building No. 2	Started 4-18-18, finished 5-15-18
Bakery	Started 4-22-18, finished 5-20-18
Civilian Hospital	Started 4-23-18, finished 6-15-18
Ward and Isolation Hospital	Started 4-23-18, finished 6-15-18
Remodelled Barracks "B"	Started 5-17-17, finished 6-24-18
Remodelled Barracks "C"	Started 6- 1-18, finished 7- 1-18
Remodelled Y. M. C. A.	Started 6- 1-18, finished 7- 1-18
Five Vehicle Storehouses	Started 2-18-18, finished 9- 7-18
Concrete General Storage Bldg.	Started 2-18-18, finished 3- 1-19

With the exception of the Vehicle Storehouses and General Storage Buildings, these buildings were of frame and of a more or less temporary nature.

Before building operations could be made possible, it was necessary, in most cases, especially at the southwestern and northwestern parts of the Island, to clear the land from trees, as a large portion of these sections were well wooded with trees ranging from three feet in diameter to brush size. Also land levels had to be graded to suit conditions, roads had to be built, and at many parts of the Island proper drainage facilities had to be effected. Considerable excavating was especially necessary at the grounds of the General Storehouse, W-I., as will be seen under that heading.

In general, Rock Island Arsenal is laid, as the name implies, on an island of rock, crusted with its own disintegrated, eroded and finely pulverized deposits, this intermixed with sedimentary organic substances, mostly of a vegetable character. The rock, like that of nearly all of this part of the United States, is a lime-stone, partially oolitic, but mostly



Above, Shop R, equipped for the manufacture of recuperators. Below, New Steam Heating Plant, housing boilers capable of supplying steam sufficient in quantity and pressure to operate the machinery of the Arsenal, serving as an auxiliary to the water power.

sedimentary, extremely finely grained. Outcrop of the rock has been encountered at nearly all parts of the Island, but an average of three feet of excavation is necessary in order to reach its bed. At various parts of the Island, especially the western part along Main avenue, rock was not encountered at over six feet depth of excavation, and in the south center, near Storehouse "G", thirty foot tests were made to reach rock. This has led, therefore, to the policy, for each project, of establishing rock grade at the site of buildings by digging to or sounding rock.

The entire sewage from the Rock Island Arsenal is drained through sanitary drains of vitrified tile, of concrete and of brick. At a point in the basement of Shops "A" and "B" there is a 24-inch brick arched sewer

extending east to the intersection of Shops "H" and "K", and all the temporary barracks on East avenue, thence south on Fourth street to the center of Fourth street and South avenue, where the laterals from Shops "A", "C", "E", "G", "I", Storehouse "A" and the main Guard House are connected. From this intersection the main 36-inch sewer is laid in a diagonal line to the power house tail race, into which it empties about 100-feet south of the power house. It also takes the sewage from the Truck Garage and the Temporary Testing Laboratory.

In August of 1917 the Stone & Webster Company constructed a 30-inch vitrified tile sewer to the Artillery Vehicle Plant, draining surface water from the low ground around the Powder and Fulminate Caves, the sewage from the Ammunition Assembling Plant, the Central Heating Plant and the new Cafeteria. This is a very good and properly constructed sewer, all laid in a graded trench with iron-covered man-holes at intervals of 400 feet.

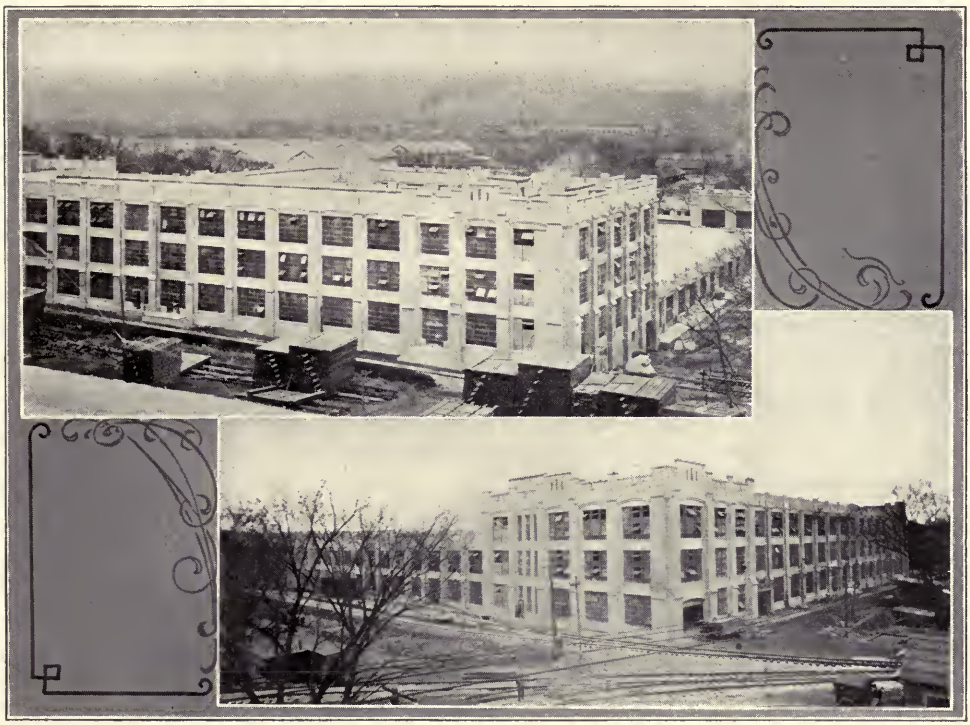
The west end of the Island is drained through a sanitary sewer installed in 1918 by the Walsh Construction Co. The sewage disposal from the six-story Storage Building drains off to the northeast through a sixteen-inch tile sewer and connects to the thirty-six inch just southwest of the Commanding Officer's quarters. Man-holes are provided in appropriate places, with a perforated iron cover.

The upper or east part of the Island is drained by a surface drain which empties into the water power pool about 3,000 feet from the Power House.

The Steel Storage Building, built by Stone & Webster, is located at the west end of the Field and Siege Building (Shop M), is a one-story steel-framed building on concrete foundation, and with an outside concrete wall to the height of the lower window sills. The superstructure walls are of hollow tile, plastered on the outside. The front walls of the building are entirely of concrete, to match the architecture of the Field and Siege Building as viewed from the Main avenue. The roof is of wood, supported on steel trusses. The building is 107 feet wide and 322 feet long, with a row of steel columns down the center. Two crane-ways are provided for, running the whole length of the building, one on each side of the center row of columns.

The new Cafeteria building is of frame on concrete foundation, 96 feet by 256 feet, and contains a men's dining room at the east end, ladies' dining room and officers' dining room at the west end, and kitchen and store room in the center. It is designed for serving meals on the cafeteria plan. A small cellar for storage is provided. The building is constructed with 6-inch studding, sheathing and drop siding and has a monitor 32-feet wide down the center. The floors are maple. The inside walls are finished with yellow pine sheathing and the ceiling with wall

board. At one end there is a cement floor porch 20 feet by 40 feet, enclosed, for the sale of candy and cigars. The service equipment was furnished by Albert Pick Co., of Chicago, but was installed by Stone & Webster, who also installed the plumbing and heating. The electric lighting was also installed by Stone & Webster, and a refrigerator plant for cooling three boxes—meat, dairy and vegetable, and drinking water—has been installed in the basement. About 2000 feet of dining tables were assembled. All the kitchen, refrigerating and service counter equipment was bought



Shop L is also an imposing structure. Here are two views of it.

by the government and installed by Stone & Webster. The building required approximately 275,000 board feet of lumber. Work was started October 1, 1918, and the first meal was served January 6, 1919.

The Parkerizing Plant is a frame building with concrete floor on concrete foundation, 36 feet wide by 76 feet long. Work was started August 22, 1918, and completed October 17, 1918.

The first duct line built by Stone & Webster at the Arsenal ran from the present service tunnel near East avenue, along the south side of the old shops, and west to the new boiler house to Shop M. This duct line was built to provide the light and power to Shop M and to the Ammunition Assembling Plant south of the boiler house. The line consists of eight 3½-

inch fibre duct, encased in concrete, with manholes approximately 300 feet apart. Branches from this duct were constructed into the rear of the south shops, where transformers were installed by the government. The second duct line consisted of a continuation from the government service tunnel west of Shop "K", around the north side of the north shops, with branches into the courts of the north shops, where transformers were also to be installed. Cable was installed in these ducts so that high tension current could be brought close to the shops, where it was to be transformed. This work was completed during the summer of 1918.

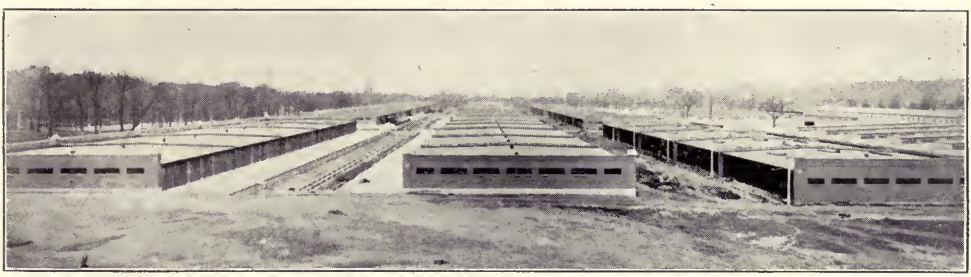
A new concrete tunnel 4 feet by 4 feet 6 inches, containing an 8-inch high pressure line and a 4-inch return line and 1½-inch drip line, was constructed by Stone & Webster from the Central Heating Plant to the new Warehouse W-I on Main avenue, to supply steam for heating that building. This tunnel is approximately 1360 feet long.

A new system of water mains for fire protection was designed by the Maintenance Department at the Arsenal during the summer of 1918. This system is designed for high pressure service (215 lbs. per square inch), which is obtained by the installation of two pumps at the new Hydro-Electric Power House. This system consists of class "F" cast iron water pipes, ranging from 14 inches to 6 inches, and runs from the Power House north along East avenue to Main avenue, west on Main avenue to a point about 300 feet west of the Davenport gate. At the junction of Main and West avenue there is a branch running north to the new temporary offices and a branch running south to connect with the present main at the Nitrate Storehouses and the Ammunition Assembling Plant. There is also a main south of the south shops from East to West avenues. At the junction of Main avenue and East avenue there is a branch running to the Hospital. From the main south of the south shops there is a branch running to the dry kilns. There is also an extension north from the main on Main avenue running along the west side of the new warehouse, and extensions around the Artillery Vehicle Storehouses and the new Steel Warehouses north of Main avenue.

The Main avenue line has also been extended, as contemplated in the original scheme, to point opposite the old Arsenal Building. Approximately 19,600 lineal feet of pipe has been installed, and there are more than 70 hydrants. All mains are laid so that there shall be a minimum of five feet covering over the top.

The General Storage Building W-I was erected by Walsh Construction Company. Plans and specifications were prepared by the Supply Division of the Ordnance Department at Washington, D. C. This building covers a ground area of about 96,000 square feet (including platforms) and has a cubical content of about 5,496,000 cubic feet. No special difficulty was encountered in the purchasing or delivery of materials. The arrival of

material being sufficiently in advance of work started not to delay normal progress of work. Excavation was started March 4, 1918. The floor level of the first floor was established about eight feet below the natural grade, in order to obtain proper track grades. A most unusual condition of rock grade was found, beds of shell rock, sometimes of considerable length and thickness, were frequently encountered imbedded in clay, and very accurate tests had to be made to determine whether bed rock had been reached. The construction is reinforced concrete four-way flat slab, with steel sash and frames. It is equipped with five elevators and one suspended tray elevator, furnished by the Link-Belt Company, of Chicago. Provisions were made for two other elevators. A feature of the building is the three stationary spiral chutes, ten feet in diameter, carried from top floor



Artillery Vehicle Storehouses, covering many acres of ground near west end of the Island.

to first floor. This building cost twenty cents a cubic foot and $2.33 per square foot of ground area. The plumbing and electrical work was installed by sub-contractors of the Walsh Construction Company, and the heating was let under an emergency form of contract to the Henry Ewinger Plumbing and Heating Company, of Burlington, Iowa, the Arsenal furnishing the material.

OTHER BUILDING OPERATIONS

Vehicle Storage Buildings.—Plans and specifications were prepared by the Supply Division, Ordnance Department, at Washington, D. C. These buildings each cover an area of about 54,500 square feet, with the exception of Number 9, which covers about 44,200 square feet of floor area. Excavation was started September 15, 1918. The footings are of rock, from three to seven feet below the surface, but no tests were made as to whether the rock was bed rock or shell rock, as struck at the General Storage Building W-I. These buildings cost about 12½ cents per cubic foot and about $1.99 per square foot of ground area. They are one-story structures built of brick, wooden posts and griders and rafters.

North and South Avenue Paving.—Plans and specifications were prepared by the Rock Island Arsenal Construction Department from sug-

gestions and data given by the Portland Cement Association, which cooperated with the Arsenal by having a representative on the work during a large part of the time. North avenue paving was already started before the Construction Division took charge, and was, therefore, not reported with South avenue. Cost accounts were, however, handled by the Walsh Construction Company as one job for the two avenues.

Motor Truck Garage.—Plans and specifications were prepared by the Rock Island Arsenal Construction Department engineering forces, and were completed about July 2, 1918; rock was struck close to the surface on the north end. During the process of excavation, it was deemed necessary to alter the position of the building as originally staked out, and an extra of $565.00, covered by specifications, was allowed the contractor. An extra of $175.00 was also allowed for column spirals, making the total cost $32,000.00. This building has a ground area of 7,000 square feet and a cubic area of 206,500 cubic feet. About 90 per cent of the material for this building was bought locally. The remainder, steel frame work and steel sash, was obtained from the Illinois Steel Company, Jacksonville, Illinois, and the David Lupton Sons Company, Philadelphia, Pennsylvania.

Three steel frame warehouses were authorized in January, 1919. These buildings are located adjacent to the vehicle storehouses on the northwestern part of the Island. Owing to the fact that a number of the former Arsenal war workers were deprived of their positions on account of the signing of the Armistice, it was decided to erect these buildings with Arsenal workmen, thereby giving employment to over three hundred and sixty men at one time. These buildings were erected more economically than if let under a cost plus type of contract, as no overhead or purchasing expense was necessary, this work being handled by the Purchasing and Time Division of the Arsenal.

These warehouses were originally intended to be erected in France for war purposes, and all the steel was fabricated and cut to the proper lengths with all holes for connections drilled, and all that was necessary was to erect the buildings in place.

WATER SUPPLY, GAS MAINS, ETC.

During the summer of 1918, to meet the demand for more filtered water, there was installed a new filter bed, which has a capacity of 500,000 gallons of water per day. This gives now a total supply of 1,500,000 gallons of filtered water per day of 24 hours. There was also installed at the filter plant a high tank, which has a capacity of 300,000 gallons of water, and is one hundred and twenty feet high from the ground line. All of the water system is now supplied from this new high tank, which gives a constant pressure of 55 lbs. at the base.

During the summer of 1918 a new ice plant, which has a 10-ton refrigerating capacity, was put in service. The ice plant was used

principally for cooling drinking water to supply all the shops through sanitary bubbling fountains.

During the summer of 1918 it was found, on account of the rapid expansion of production in the shops, that the gas main supplying city gas for furnaces, hardening, etc., was not large enough for the demand. The old gas main location was from the Forty-second street bridge, Rock Island, and through the new Nitrate Storage building site. This was considered dangerous, in addition to its being too small. An allotment was made to install a new 6-inch gas main from the Forty-second street bridge in Rock Island, following the street car track around to the east of Shop

Temporary Office Building No. 2. It was necessary to provide quarters for hundreds of extra office workers during the war. This is one of the buildings erected for that purpose.

"G" and then north to Shop "H". After this was completed the Arsenal was then in a position to take care of all the furnaces that were required. This gas is furnished by the Peoples Power & Light Company, of Moline, and is metered in each shop.

In June, 1917, there was installed in the west wing of Shop "F" one Sullivan high pressure air compressor. Previous to this time there were only two small air compressors in service. These not being large enough for war work, it was necessary to greatly increase the air capacity. There were also installed in Shop "M" one high pressure Worthington air compressor of 2500 feet capacity and one low pressure Worthington compressor of 2800 feet capacity. It was found during the summer of 1918 that it would be necessary to move the low pressure machine from Shop "M" to Shop "F" to supply enough air for the additional furnaces installed in

this building. After this was done there was plenty of air to take care of all requirements.

There are eight 500 horse power Babcock & Wilcox boilers, arranged in batteries of two units each. The eight boilers are served by one stack, 12-foot inside diameter, and extending 210 feet above the grates. The working steam pressure of the boilers is one hundred and fifty pounds, and there are four four-inch Ashton safety valves on each boiler, set at 150 pounds. Each boiler has 5,080 square feet heating surface, 252 four-inch tubes and 108 square feet of grate surface.

PROTECTIVE LIGHTING

A series incandescent light circuit was installed on the fence surrounding the manufacturing shops and storehouses—one circuit for the Nitrate Storehouses and one circuit for the Ammunition Plant. The illumination is such that a guard patroling the fence is able to see the entire length, which is, in some cases, 2,000 feet, approximately. Flood lamps were placed on the power house, lighting the river on both the north and south sides. The avenues are lighted with a series incandescent light circuit, eighty candle power lamps being installed every two hundred feet.

For inter-communication between the various shops and departments, a three hundred line two-wire local battery automatic telephone exchange has been installed. This system not only takes care of the manufacturing shops and storehouses, but affords communication between the outlying guard houses, pumping station and power houses.

An electric time system was installed in many of the departments, which takes care of the job cards of the employees on piece and day work; electric time recorders are also used for employees, registering their time of arrival and departure.

An electric signal system, which consists of klaxons installed in each shop, are controlled by the master clock through a series of relays. These klaxons are sounded automatically for the working hours of the shops.

On June 30, 1912, the following roads were in use on the reservation: 8.88 miles of macadam, 11.61 miles of cinder, 0.57 mile of taroid.

At the end of the fiscal year 1916-1917 the following roads were in use: 5.27 miles macadam, 11.61 miles cinder, 4.21 miles taroid.

Roads on reservation in March, 1919, consisted of: 8.85 miles macadam, 5 miles taroid, 6 miles concrete, and 6.33 miles cinder.

At the beginning of the war there was 3.13 miles of railroad trackage on the reservation. During the year 1918 approximately 16 miles of finished track was laid, all light rails in the old tracks having been replaced with 80-pound rails, switch lights installed, etc.

SUMMARY OF CONSTRUCTION PROJECTS COMPLETED AT ROCK ISLAND ARSENAL SINCE APRIL 7, 1917

Name of Project	Type of Construction	Purpose	Cost
Steel Water Supply Tank	Steel, 300,000 gals. capacity	Water supply	$ 21,400.00
Ice-Making Plant	Brick and concrete	Ice for shops and refrigeration for drinking water system	24,500.00
Non-Commissioned Officers Quarters	Hollow tile, stuccoed	Quarters for Non-Commissioned Officers	10,600.00
Toilet Addition to Stone Barracks	Stone building with reinforced floors, slate roof	Toilet facilities for Ordnance personnel	32,500.00
30 Nitrate and Ammunition Storehouses	Hollow tile, concrete construction. Each building 50′x200′. Steel trusses	Storage of sodium nitrate and artillery ammunition	490,000.00
Artillery Vehicle Storehouse	Reinforced concrete construction 2-story and attic; 53′x140′.	Storage of artillery vehicles	31,330.00
Artillery Ammunition Assembly Plant	Reinforced concrete construction, 360′x400′; north section, 3 stories; east section, 2 stories; west section, 1 story; basement under entire building	Assembly of artillery ammunition	2,093,000.00
Wheel Stock Dry Kiln	Reinforced concrete and hollow tile construction, 105′x267′. Contains 27 Tiemann type kilns	Drying wheel stock	The cost of these three projects is approximately $520,000.00
Gun Stock Dry Kiln	Reinforced concrete and hollow tile construction, 105′x115′. Contains 11 Tiemann type kilns	Drying and seasoning of gun stocks	
Three (3) Lumber Sheds	Steel frame, slate roof; each shed approximately 40′x240′	Storage of gun stocks and wheel stock material	
Addition to Gun Stock Dry Kiln	Reinforced concrete and hollow tile construction, 105′x152′. Contains 17 Tiemann type kilns	Drying and seasoning of gun stocks	$ 127,000.00
Artillery Vehicle Plant	Reinforced concrete construction. Consists of Main Erection Shop 120′x605′, 4 stories; 3 wings each 80′x200′, 4 stories and basement; and one story Forge Shop, 160′x160′	Manufacture of field artillery material	2,225,000.00
4 Shop Connections	Reinforced concrete construction, with stone veneered walls. Each building 60′x90′, 2 stories, attic and basement	Additional manufacturing space. Small arms, harness, field artillery material, etc.	360,000.00
Central Steam Heating Plant	Reinforced concrete construction, containing eight 504 H. P. water tube boilers, automatic stokers, etc. Stack 210′ high, 12′ dia.	Heating of shop buildings	610,000.00
Steel Storage Building	Reinforced concrete and hollow tile construction, 106′x320′	Storage of steel used in manufacturing operations	173,000.00
Tinning and Plating Shop	Reinforced concrete construction, 50′x160′	Tinning and plating of articles manufactured in Equipment Shop	23,000.00
Storage Building W-I	Monolithic concrete construction with flat slab floors and roof. 140′x540′, 6 stories	General storage	1,560,000.00
Eight Vehicle Storage Buildings	Brick exterior walls, mill constructed roofs, concrete floors with 35 feet concrete platforms. (7 buildings 115′x500′ and one building 115′x400′)	Storage of artillery vehicles	865,000.00
Motor Truck Garage	Reinforced concrete construction, brick walls, flat roof supported on steel trusses, 70′x100′, two stories	Storage and repair of motor trucks	35,500.00
Addition to North Lumber Shed	Light steel frame and slate roof construction, 36′x140′	Storage of lumber	7,534.00
Office Annex No. 1	Temporary frame construction, 30′x90′, three stories	Additional office space	18,000.00

SUMMARY OF CONSTRUCTION PROJECTS COMPLETED AT ROCK ISLAND ARSENAL—Continued

Name of Project	Type of Construction	Purpose	Cost
Barracks "A"	Temporary frame construction, 20′ x147′	Housing Ordnance School personnel	5,500.00
Barracks "B" and "C"	Temporary frame construction, (Barracks "B" accommodates 412 men and Barracks "C" accommodates 465 men)	Housing Ordnance School personnel	74,000.00
Headquarters for Casual Military Personnel	Temporary frame construction, 43′x150′	Headquarters building for Ordnance School Commissioned personnel	15,000.00
Recreation Building and Post Exchange	Temporary frame construction, 38′x146′	Post exchange and recreational quarters	11,500.00
First-Aid Hospital	Temporary frame construction, 44′x77′	First-aid treatment of civilian cases	9,200.00
Isolation Hospital	Temporary frame construction, 20′x60′	Isolation cases	3,000.00
Hospital Ward and Isolation Ward	Temporary frame construction, standard hospital ward units; each 124′x150′	Hospital ward designed for general cases and isolation ward for care of contagious diseases	22,600.00
Laboratory for Motor Truck Testing	Temporary frame construction, 71′x100′	Testing of motor trucks and tractors	17,700.00
Office Building No. 2	Temporary frame construction, main building 42′x136′; two wings each 43′x98′; 3 stories	Increasing office space	61,000.00
Barracks "D"	Temporary frame construction, 43′x140′, two stories	Housing battalion of 10th Infantry stationed at Rock Island Arsenal for guard purposes	60,000.00
Parkerizing Plant	Temporary frame construction, with concrete floor, 76′x36′	Parkerizing components of U. S. Rifle, Cal. .30	9,700.00
Cafeteria Building	Temporary frame construction, 96′x256′. Concrete foundation with maple floors	Facilities for serving lunch to Arsenal employees	93,000.00
5 Temporary Storehouses	Temporary frame construction, size of buildings as follows: 60′x600′—1 story (MA) 60′x504′—1 story (BA) 60′x372′—1 story (KA) 60′x352′—1 story (GA) 52′x147′—1 story (AA)	General storage purposes	95,000.00
3 Steel Warehouses	Steel frame construction, corrugated sheet metal siding, prepared roof, cinder floor. Each building 240′x500′	General storage purposes	259,000.00
Extension of Hydro-electric Power Plant	Superstructure is a brick building, 30′x233′. Extension contains eight 420 H. P. turbines, direct connected to 403 K. V. A. generators and 2 196 H. P. turbines, direct connected to 130 kilowatt generators	Increasing power supply	748,000.00

ARSENAL'S MANUFACTURING CAPACITY

With its greatly increased capacity the Arsenal, of course, is prepared to play an even more important part in future wars, if any occur, than it has in the wars of the past. In order to ascertain just what may be expected of it as a manufacturing plant, a close study of its resources has been made and the results are summarized in tabular form, as here appended. With diversified output the individual items may not seem so imposing, but should attention be centered upon a relatively small number of the more

essential articles of war equipment the output will run into large figures. The following ingenuously arranged tabulation gives in most concise form all available information pertaining to possible rate of production of the various items with the existing facilities:

"A"—Facilities installed expressly for production monthly of the following:

(1) 360 75mm. gun recuperators
(2) 40 3″ A. A. gun recuperators

"B"—Production units for simultaneous production per month of approximately:

(1) 4 155mm. or 4.7″ gun recuperators
(2) 4 155mm. howitzer recuperators
(3) 4 155mm. gun carriages (without recuperators)
(4) 4 155mm. howitzer carriages (without recuperators)
(5) 6 4.7″ gun carriages (without recuperators)
(6) 10 75mm. gun carriages (without recuperators)
(7) 4 155mm. gun carriage limbers
(8) 4 155mm. howitzer carriage limbers
(9) 6 155mm. howitzer caissons or limbers
(10) 6 4.7″ gun caissons or limbers
(11) 10 75mm. gun caissons or limbers
(12) 10 battery and store wagons, Model 1917
(13) 10 75mm. forge or store limbers

"C"—The production units for the items listed in paragraph "B", if devoted to one item, could produce a maximum quantity of that item as follows:

4 155mm. or 4.7″ gun carriages with recuperators and limbers
4 155mm. howitzer carriages with recuperators and limbers
40 4.7″ gun carriages, Model 1906
75 75mm. gun carriages, Model 1916
250 75mm. gun limbers or caissons
250 Battery and store wagons, Model 1917
250 Forge or store limbers, Model 1902 MI

"D"—Tools, jigs, fixtures, patterns and gauges in store at this Arsenal available for issue to contractors for a monthly production of:

60 155mm. gun material
200 155mm. howitzer material
100 4.7″ gun material
360 75mm. gun material
40 3″ A. A. gun material

Note: By "material" is meant complete equipment for carriages, caissons, limbers, battery and store wagons, forge and store limbers, reels, carts, tools and accessories, pertaining to the calibre mentioned.

"E"—Simultaneous production per month of:

30,000 U. S. rifles, Model 1903
6,000 Browning automatic machine guns, Model of 1917
12,000 Browning automatic rifles, Model of 1918

Note: The machinery for these two units is at Rock Island Arsenal but not yet installed, the above figures is the estimated possible production only, should installation be accomplished.

"F"—Simultaneous production per month of:

100,000 mess equipment—canteens, cups, meat cans, etc.
3,000 arm racks, Model 1920
250,000 tin containers for 75mm. ammunition
13,750 hardware for rolling targets
27,500 hardware for sliding targets
20,000 (1) 6″ cartridge storage cases
13,750 (2) 8″ cartridge storage cases
13,750 (3) 10″ cartridge storage cases
11,250 (4) 12″ cartridge storage cases

Note: Capacity limited on cartridge storage cases as above to (1) and either one of (2), (3) or (4) simultaneously.

"G"—Simultaneous production of either (1), (2) or (3) of each unit at the same time per month:

5,625 (1) wheels, 56″ complete
3,750 (2) wheels, 58″ complete
2,750 (3) wheels, 50″ and 60″ complete
37,500 (1) packing boxes
90,000 (2) cartridge storage case shipping covers
18,750 (3) bobbing targets
15,000 (1) chests for Browning automatic rifles or machine guns
13,750 (2) rolling targets, complete
7,500 (3) carpenter's chests
7,500 (1) arm repair chests
7,500 (2) sliding targets, complete
5,625 (3) saddlers' chests

"H"—Simultaneous production of (1) and either (2) or (3) at the same time per month:

75,000,000 (1) target pasters
600,000 (2) paper targets 6′x10′
900,000 (3) paper targets 6′x6′

"I"—

175,000 (1) bayonet or bolo scabbards, Model 1910
60,000 (2) saber scabbards, Model 1913

Either (1) or (2) can be manufactured simultaneously with other parts at this Arsenal, but facilities for the necessary cloth and leather work

thereon are available to complete a maximum of only 7,500 of either per month.

"K"—Special machine tools, not installed, which, with addition of standard tools, will permit of manufacture in addition to the facilities now available as in "A", "B", "C", and "D" above:

300 155mm. howitzer recuperators per month
80 155mm. gun recuperators per month

INCREASE OF STORAGE SPACE

Among the striking changes the World War brought to Rock Island Arsenal was the increase of storage space from 545,000 square feet on March 31, 1917, to 948,000 square feet on February 28, 1918, with corresponding cubical contents of 12,250,000 feet.

The functions of the storage section of the Arsenal, during the war, embraced activities which controlled sixty warehouses, located in various parts of the Island, containing approximately 1,764,837 square feet of

Storehouse VI, showing method of storing artillery.

storage space under roof, in addition to oil storage space totalling 417,357 gallons. This storage ranged from newly constructed modern warehouses, with elevators, box conveyors and gravity conveyors, to temporary platforms roofed in. Some of the major items in use embraced 2,000 feet of gravity conveyors, seven locomotive cranes, four tractors, twenty trucks and trailers, and one shop mule.

The volume of incoming and outgoing freight from July 1, 1919, to June 1, 1920, is shown in the following summary:

Cars received	9,280
Cars shipped	2,485
Cars transferred	2,727
Total tonnage in pounds	555,404,304
Government bills of lading received	10,254
Commercial bills of lading received	3,149
Bills of lading forwarded	10,700
Shipments	12,710
Number of pieces	631,685

The gradual increase in storehouse activities at the Arsenal may be thus summarized: For the calendar year of 1916 the shipments averaged approximately 780, representing a monthly average of 8,000 pieces, weighing 450 tons. In February, 1918, a total of 2,300 shipments were made, weighing 3,383 tons and comprising 85,000 pieces. In April, 1918, this had increased to 3,406 shipments, consisting of 59,796 pieces and weighing 18,312,000 pounds.

Building done since the early part of 1918 has more than doubled the amount of storage space, so that there are now about two million square feet available for the sheltering of war material, manufactured and in the raw state. The following table gives the designation of existing storage structures, the use for which they were intended, and the capacity:

Nitrate and Ammunition Storehouses.

STORAGE SPACE AT ROCK ISLAND ARSENAL

Building	Floor	Type of Material	Capacity in Square Feet
V-1	1	Vehicle storage	54,300
V-2	1	Vehicle storage	54,300
V-3	1	Tractor parts	54,300
V-4	1	Vehicle storage	54,300
V-5	1	Vehicle storage	54,300
V-6	1	Tractor parts	54,300
V-7	1	Vehicle storage	54,300
V-8	1	Vehicle storage	54,300
V-9	1	Vehicle storage	42,900
V-10	1	Vehicle storage	120,000
V-11	1	Tank, tractor and vehicle storage	130,000
V-12	1	Artillery gun stock blanks	130,000
V-14	1	Vehicle storage	21,720
V-15	1	Vehicle storage	32,580
W-1	6	Miscellaneous spare parts for artillery and small arms	
	1st floor	Artillery and small arms	68,000
	2nd floor	Artillery and small arms	68,000
	3rd floor	Artillery and small arms	68,000
	4th floor	Artillery and small arms	68,000
	5th floor	Artillery and small arms	68,000
	6th floor	Artillery and small arms	68,000
A	4	Tools, jigs and fixtures	
	1st floor	Tools, jigs and fixtures	15,075
	2nd floor	Tools, jigs and fixtures	15,075
	3rd floor	Tools, jigs and fixtures	15,075
	4th floor	Tools, jigs and fixtures	15,030
AA	2	Dies	
	1st floor	Dies	7,081
	2nd floor	Dies	7,592
X-1	1	Small arms ammunition storage	9,500
X-2	1	Cal. 30 rifle storage	9,500
X-3	1	Cal. 30 rifle storage	9,500
X-4	1	Sodium Nitrate storage	9,500
X-5	1	Motor storage	9,500
X-6	1	Tools, jigs and fixtures	9,500
X-7	1	Rifle storage	9,500
X-8	1	Motor storage	9,500
X-9	1	Cal. 30 rifle storage	9,500
X-10	1	Miscellaneous Mark VIII tank material	9,500
Y-1	1	Mark VIII transmissions	9,500
Y-2	1	Cal. 30 rifle storage	9,500
Y-3	1	Fireworks hand grenade storage	9,500
Y-4	1	Small arms ammunition storage	9,500
Y-5	1	Sodium nitrate storage	9,500
Y-6	1	Sodium nitrate storage	9,500
Y-7	1	Sodium nitrate storage	9,500
Y-8	1	Sodium nitrate storage	9,500
Y-9	1	Sodium nitrate storage	9,500
Y-10	1	Small arms ammunition storage	9,500
Z-1	1	Cal. 30 rifle storage	9,500
Z-2	1	Sodium nitrate storage	9,500
Z-3	1	Cal. 30 rifle storage	9,500
Z-4	1	Sodium nitrate storage	9,500
Z-5	1	Rifle storage	9,500
Z-6	1	Rubber tire storage	9,500
Z-7	1	Rubber tire storage	9,500
Z-8	1	Small arms ammunition storage	9,500
Z-9	1	Rubber tire storage	9,500
Z-10	1	Mark VIII transmission storage	9,500
A-1	1	Smokeless powder magazine	2,400
L-4	1	Primer and fuze magazine	377
L-5	1	Primer and fuze magazine	234
L-6	1	High explosive magazine	25
L-7	1	High explosive magazine	100
L-8	1	High explosive magazine	100
L-9	1	High explosive magazine	504
L-10	1	High explosive magazine	504
L-11	1	High explosive magazine	504
L-12	1	High explosive magazine	504
L-13	1	High explosive magazine	504
L-14	1	High explosive magazine	504
L-15	1	High explosive magazine	504
L-16	1	High explosive magazine	504
B-A	1	Inert storage	27,500
G	3 floors	Spare parts for tank	
	1st floor	Spare parts for tank	10,294
	2nd floor	Spare parts for tank	10,294
	3rd floor	Spare parts for tank	10,294

STORAGE SPACE AT ROCK ISLAND ARSENAL—(Continued)

Building	Floor	Type of Material	Capacity in Square Feet
G-A	1	Spare parts F. W. D.	12,728
1	3 floors	Spare parts F. W. D.	
	1st floor	Spare parts F. W. D.	7,132
	2nd floor	Spare parts F. W. D.	7,132
	3rd floor	Spare parts F. W. D.	7,132
K	4 floors	Returned field stores	
	1st floor	Returned field stores	15,075
	2nd floor	Returned field stores	15,075
	3rd floor	Returned field stores	15,075
	4th floor	Returned field stores	15,075
K-A	1	Returned field stores	14,650
M-A	1	Returned field stores	33,230
Shop "A"	4 floors	Miscellaneous material for manufacturing shops	
	1st floor	Miscellaneous material for manufacturing shops	43,701
	2nd floor	Miscellaneous material for manufacturing shops	43,910
	3rd floor	Miscellaneous material for manufacturing shops	38,349
	4th floor	Miscellaneous material for manufacturing shops	40,404
Arsenal Building	4 floors	Inert storage	
	1st floor	Inert storage	9,500
	2nd floor	Inert storage	9,500
	3rd floor	Inert storage	9,500
	4th floor	Inert storage	9,500

Arsenal employees participating in Liberty day celebration, Nov. 11, 1918.

Expansion of Shop Personnel

ON the 13th of June, 1921, the President, in commenting upon the present National Defense Law, made the following statement: "Our present National Defense Law establishes an economical and democratic military policy thoroughly consistent with our national traditions. It provides for a small regular army, to be augmented by great citizen forces in the event of national emergency. This is our traditional military policy. But, whereas in the past these larger war forces have been extemporized after the occurrence of an emergency, the new law wisely provides that the frame work of their organization shall be established and developed in time of peace, in so far as this is practicable, through the voluntary services of patriotic young men. The Army of the United States, as defined in the new law, comprises the Regular Army, the National Guard and the Organized Reserves. Every patriotic citizen should encourage the development of these forces, each within its proper sphere."

In line with the policy expressed above, the Arsenals of the United States, whose function is the creating of war material, should in time of peace likewise be developed, in order that they may be prepared to meet the emergencies of war. That this doctrine of development has been pursued, is evidenced in the steady growth of the Rock Island Arsenal. In the years immediately preceding the Spanish-American War some manufacturing was done, but it was small in amount and the manufacturing plant was of limited capacity.

In the emergency incident to the outbreak of war with Spain the necessity for increasing output at once became apparent, and every energy was strained to satisfy the demand. The plant was largely increased at that time, but arrangements were not entirely satisfactory, and at the close of hostilities a well-considered plan for the development and expansion of the manufacturing plant was laid down. At that time only two of the ten great shops in the Armory and Arsenal rows were utilized for manufacturing purposes. Under the plan of development which followed in later years seven of the ten shops were, at the outbreak of the World War, fully equipped with machinery and apparatus.

Recent strides in further expansion of facilities of the plant evidenced the perpetuation of the adopted policy of development, and today the plant as it stands represents a permanent national investment.

Of no less importance in the scheme of plant development is that of the expansion of the Arsenal working force. It has been the practice of the past, at the outbreak of war, to expand the small peace-time organization

into that of a great non-professional war-time producing unit. The situation presented by the World War is recent enough to permit this expansion being visualized, but in order that this conception may be more clearly developed, a statement concerning the civilian personnel will not be amiss.

The manufacturing work in the shops is in charge and under the control of officers who are specially educated and trained for such duty. The work is carried on by civilian employees recruited from residents in the neighboring cities of Davenport, Iowa, and Rock Island and Moline, Illinois. These employees are selected men; are protected in the permanency of their employment by the Civil Service laws, and are unquestionably unequalled by any body of men to be found in similar vocations. But few industrial concerns in the country manufacture at a single establishment the variety

Women workers in the cloth department, photographed shortly before the Armistice was signed.

of articles which the Arsenal is called upon to produce, and in few plants can be found vocations of so diversified a nature. Under Government employment they have the benefit of clean, well lighted, well heated and commodious shops, with all sanitary conveniences. They have Saturday half-holiday, with pay, in the summer months. They have thirty working days' leave, with pay, each year, and when disabled for more than thirty days, through injury received in the course of employment, are granted full pay for the time absent from work on account of such injury; if in the classified service, they are pensioned on arriving at retirement age, provided they have a maximum of fifteen years' service to their credit. The rule of the Government is to pay the same hourly rate of wage as that which prevails in the vicinity for similar work.

Surely the conditions surrounding the employees at Rock Island Arsenal, in respect to conveniences, conditions of work, leave privileges, compensation for injury and rate of wages, cannot be equalled by that of any other body of men in the vicinity. That these circumstances are appreciated, is indicated by the large number of employees of long service included in the file of its workers. A large number have records of from twenty-five to thirty years, and the larger proportion of employees have been at the

Arsenal ten years or more. Records of long and steady employment speak more for working conditions and contentment than pages of argument could do.

While the conditions cited redound to the benefit of the employees, the Government, in turn, benefits through the morale of the organization which such conditions engender. Continuity of employment makes toward perfection of workers in the line of their endeavor. Through close and long association in the manufacture of ordnance they become skilled in the art of its specialized manufacture and acquire a technique of inestimable value as a factor in increased production. This is especially true in the manufacture of small arms. Recognition of this fact by the Ordnance Depart-

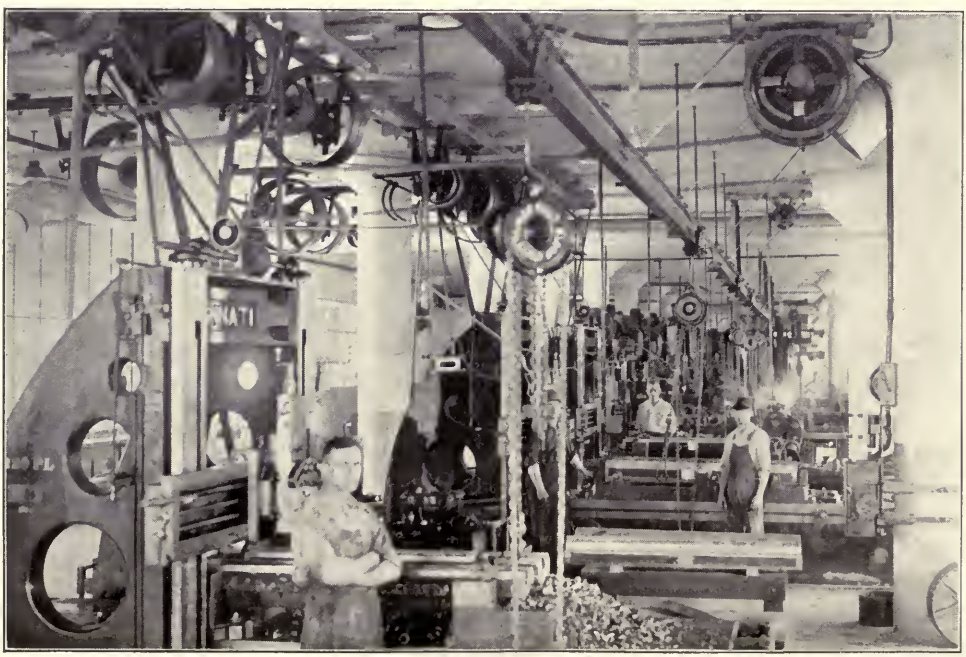
Of course the Arsenal workers had a band, and it was a good one.

ment can be found at the time the manufacture of small arms was first undertaken at Rock Island Arsenal. Workmen skilled in the manufacture of the rifle, to the number of three hundred, were transferred from Springfield Armory at the expense of the Government to inaugurate the work of rifle manufacture at this Arsenal and to school new employees in the manufacturing processes in connection therewith, owing to the dearth of skill at the Arsenal in this line of manufacture.

In a large sense this is the duty which devolves upon the nucleus of the peace-time organization of the Arsenal when war is imminent, and this process of expansion, carried on at the outbreak of the late war, enabled Rock Island Arsenal to quickly attain a maximum production to meet the demands of the army in the field. The force, which consisted of approximately three thousand employees at the outbreak of the war, was expanded to a force numbering approximately fourteen thousand. This expansion, although gradual, covered, in reality, a remarkably short period of time. The responsibility rested upon the Employment Department to determine, from statements of capabilities of applicants having no well defined trade,

such as machinist, carpenter, etc., the particular duty for which the prospective employee was best adapted; after selection, appointment and actual trial in the shops, it oft-times developed that employees possessed capabilities which justified their selection for other and perhaps more important work, differing widely from that for which they were originally selected. The duty of imparting to the inexperienced the knowledge of shop practice that enabled him to perform efficiently one or several of the many shop operations with which charged, and the co-ordinating of his duties into that of a well-organized producing unit, was the task which fell to the more experienced employee of the Arsenal peace-time force.

No less complex in its nature was the problem of demobilization of the vast working army upon cessation of hostilities. Many workers who, at the outbreak of the war, prompted solely by the spirit of loyalty, had left their regular lines of employment to assist in the production campaign at the Arsenal, returned to their chosen vocations upon the signing of the Armistice. In the process of elimination of those that remained, the more efficient were retained. The gradual resumption of peace-time manufacture and production required, naturally, very heavy reductions to bring the working force within the proportions allowed the Arsenal under its reduced appropriations. In making these reductions the established policy of the War Department was followed, and all reductions were based on efficiency, consideration, however, being given those of the force whose military service entitled them to preference.



Interior of machine shop.

Military Personnel

FROM a small and comparatively unknown military post a few years ago, Rock Island Arsenal has come to be recognized all over the country as one of the leading Government posts. A large military personnel is unnecessary, because of the isolated position and natural topographical advantages.

At the beginning of hostilities in 1917 the post had ten officers and an ordnance detachment of 89 enlisted men, six enlisted men in the Medical Department and three enlisted men in the Quartermaster's Corps. This force was gradually increased by authorization of the Chief of Ordnance, until at the conclusion of the fighting in Europe there were 76 ordnance officers and 169 enlisted men. In addition, there were six medical officers, with a detachment of 45 enlisted men, and three officers of the Quartermaster's Corps, with 48 enlisted men.

The following is the roster of officers stationed at Rock Island Arsenal for duty at the date of the signing of the Armistice:

ORDNANCE DEPARTMENT

Colonel LeRoy T. Hillman (Commanding Officer.)

Lieutenant-Colonels Lloyd G. McCrum, Emil Tyden.

Majors Horace C. Sykes, Robert L. Messimer, Thomas Kirk, Rupert L. Penny, Robert L. Streeter, C. K. Boettcher, Lorenze B. Somerby, Milton D. Campbell.

Captains Henry A. Brown, Charles G. Kaelin, Hammond W. Whitsitt, Albert R. Chandler, Ernest M. Gross, William G. Noth, Francis H. French, Max Steinhauer, Francis S. Day, Norman B. Scott, Richard S. Hosford, John J. Berry, Charles A. Barton, John B. Thompson, Robert H. Fulton, Jr., Newman M. Marsillius, Ernest Mosman, Victor A. Stibolt, Harry B. Knowlton, Clifford B. Langstroth, Joseph S. Stringham, S. W. Burford, Walter C. Hull, Louis Carson, Leo. C. Smith.

First Lieutenants Charles P. Tymeson, M. M. Smith, G. Jules Polhemus, Hulbert D. Bassett, Edgar M. Webb, William D. Lacey, Clarence F. MacKay, Elmer L. Kyle, Sam Lewis, Robert G. Meyler, John O. Powell, Edward C. Blackwood, Charles P. Skinner, W. A. Gately, J. Reed Lane, Urban J. Rockcastle, Robert C. Black, Robert C. Mitchell, Charles H. Tharp, Albert W. Davis, Robert F. Peelle, John M. Metzger, Edward R. Kent, E. S. Russell, P. R. L. Hogner.

Col. Leroy T. Hillman, deceased, Commandant at the time of the signing of the Armistice.

Second Lieutenants Frank J. Vonachen, Herman J. Hutkin, Walter Latt, Donald F. Smith, Charles R. Martin, H. S. Francis, G. C. Jefferson, C. J. Rafinski, Philip N. Wright, Paul Keachie, Harry A. Wilson, E. S. Higginbotham.

MEDICAL DEPARTMENT

Major Chester H. Clark.

Captains George G. Parlow, Elbert E. Cone, Walter E. Hunt, Fred F. Sprague.

First Lieutenants U. S. Boyer, Otto Kolar (Dental).

QUARTERMASTER CORPS

Captain James L. Greene.

Second Lieutenants Clifford Martin, Thomas F. Drummy.

ATTACHED

First Lieutenant E. C. Wright, Philippine Scouts (Retired)

Local interest attaches to the fact that in addition to those residents of the Tri-Cities whose names appear among those listed above as serving at the Arsenal at the time of the signing of the Armistice, the following officers, commissioned from civil life either during the earlier stages of the war or while undergoing a course of instruction preparatory to overseas duty, were stationed at the Arsenal:

Major Ordnance Reserve Corps—Alfred LaMar.

Captains Ordnance Reserve Corps—A. D. Ficke, R. A. Gregory, J. M. Hassett, Harry Hoisington, W. J. Larson, A. W. Mitchell, Leon Mitchell, H. G. Roberts, O. H. Seiffert, C. P. Skinner, Wm. B. Spears, George W. Thompson, J. A. Utts.

First Lieutenants Ordnance Reserve Corps—G. Decker French, E. R. Guyer, Emil H. Hass, C. E. Pingle.

Second Lieutenant Ordnance Reserve Corps—M. K. McPhail.

Troops drawn up to witness presentation of faithful service badges to old employes.

Civilian and Military Guard

ONE of the most striking features at Rock Island Arsenal during the period of the war was the careful and efficient manner of guarding the government property by means of both civil and military guards on and about the Island.

Prior to the declaration of war the shop guard consisted of four civilian guards and four soldiers, the latter members of the permanent ordnance detachment of the regular army. These were known as "key men," and reported by means of clocks at various points in the shops.

Immediately after war was declared, however, means were taken to protect the property and equipment, and a high wire enclosure was built

Rock Island Arsenal Military Drill Corps.

around the shops, the main storehouses, and the oil houses. Nine more civilian guards were employed to patrol the main gates and the west railroad gate. Admission to the wire enclosure could then only be secured by the presentation of the proper pass.

Rock Island Arsenal Women's Military Drill Corps.

At the time the gate guards were employed, sixteen more civilians were placed as shop guards and given posts around the shops to patrol. A sergeant of the ordnance detachment was placed in charge of these guards.

In March, 1917, Companies A and F, 6th Illinois Infantry, were ordered to the Arsenal for outside guard duty; they continued to guard government property until February, 1918, when the 1st Battalion of the 10th United States Infantry was assigned to this duty in their stead. The battalion

Fire fighting force assembled before headquarters.

numbered approximately 1,000 men and patrolled all the Island outside the enclosure, establishing thirty-two posts where a sentry was on duty all the time. These posts included the pump house, railroad bridges, magazines, power dam, and other places of importance. In the meantime, many other civilian guards and members of the ordnance detachment were assigned to escort all civilians whose business required their presence inside the enclosure, and a traffic squad was organized from the detachment to handle the enormous flow of pedestrians and vehicles to and from the Island in the mornings and evenings.

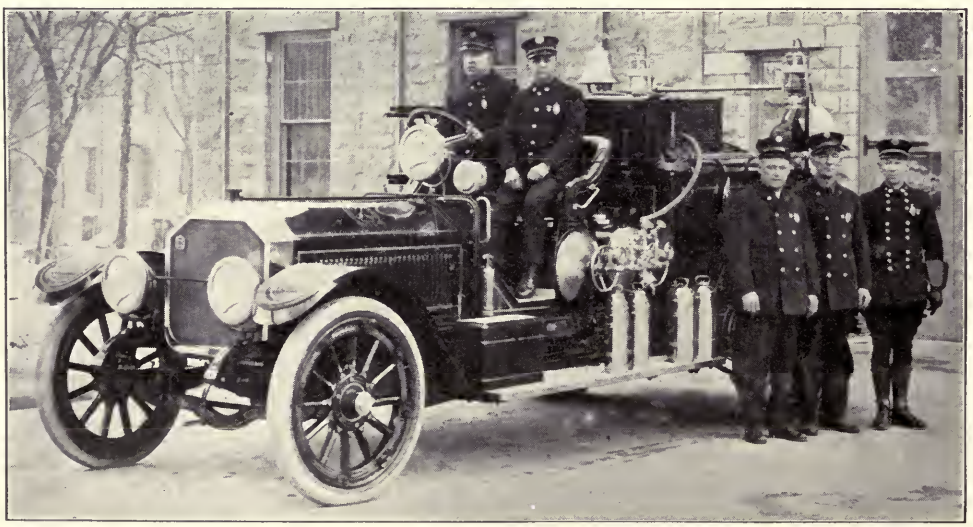
During the first week in August, 1918, the Headquarters 5th Batallion and Companies B, C and D, United States Guards, relieved the Tenth Infantry from this duty. The guards comprised twenty officers and about 450 men.

This organization was increased later by a company of the Twentieth United States Infantry.

PROTECTION AGAINST FIRE

Prior to January 1, 1918, the fire department at the Arsenal was entirely inadequate for the protection of the huge amount of property and many buildings, and all members of the department were civilian employees from the shops, under the direction of the master mechanic, the entire personnel comprising forty men. On January 1, 1918, two men were employed as drivers of the pumping machine.

About April 1, 1918, authorization was given for the reconstruction of the department, and an experienced fireman was assigned as chief. Twenty men were subsequently employed. The double platoon system was placed in effect, and a full equipment of the most modern motorized fire-fighting apparatus replaced the obsolete types formerly in use. A high pressure water system was built and an electric alarm system installed. Fortunately, no serious fires occurred, due principally to the propaganda of the safety department and constant efforts and inspections by the fire marshal and chief.



Chemical Fire Truck ready for action.

Post-War Activities

WORK PERFORMED BY ROCK ISLAND ARSENAL FOR OTHER DEPARTMENTS OF THE GOVERNMENT

A provision in the Act of July 11, 1919 (Public No. 7, 66th Congress), reads as follows:
"That no part of the moneys appropriated in each or any section of this Act shall be used or expended for the purchase or acquirement of any article or articles that at the time of the proposed acquirements can be manufactured or produced in each or any of the Government Arsenals of the United States for a sum less than they can be purchased or produced otherwise."

THE purpose of the inclusion of the above provision in legislation was to provide for placing with the Ordnance Department orders for supplies by the Supply Bureaus concerned which could be manufactured by Arsenals cheaper or to better advantage than they could be procured from other sources. Prior to its adoption the large, spacious shops of the Arsenal, with their machines and shop appliances and facilities capable of producing work more diversified in character than that of any other government Arsenal, had been utilized almost exclusively in the manufacture of ordnance with the procurement of which the Ordnance Department was charged.

In order to accomplish the object of the above Act, and to co-ordinate the work between the Ordnance Department and the bureaus concerned, there was established in the office of the Chief of Ordnance an Arsenal Orders Branch, through which medium the Arsenal receives information and data concerning the requirements of other bureaus and has opportunity to submit quotations on articles for which inquiries are sent out. Bids submitted in answer are assured the same consideration as to price and time of delivery as are those from other bidders.

The Arsenal has received 92 orders as a result of bids, 72 from the Ordnance Department and 20 from other departments. Of the circulars received, over 90 were returned on which no quotations were submitted, due to the fact that in many cases they called for small quantities of items of commercial manufacture for which it would have been hopeless for the Arsenal to attempt to compete, as they were items included in the regular output of commercial plants.

The diversified nature of the work which the orders involved will be noted from the statement that the work performed covered torpedo parts and forgings for combustion flasks for naval torpedo stations, Bebout weirs for use on the Ohio river dam, emergency gates for the United States Engineer Department, bomb racks and demolition bombs for the Air Service, and mail bags and straps for the Post Office Department.

The Arsenal, however, under instructions from the War Department, must confine its operations to manufactures for which its machinery and

equipment is adapted, and is not permitted to acquire additional machinery for the purpose of further invading the commercial field.

The production attained at the various Arsenals and by the industrial plants throughout the country engaged in the manufacture of munitions of war naturally found the government, upon cessation of hostilities, with vast quantities of ordnance stores of every description, both in finished and partly finished state, on hand, together with large quantities of components.

The most serious handicap in the manufacture by private concerns of war munitions in the World War was their unfamiliarity with the highly specialized business of manufacturing munitions, and if the Arsenal is to develop in times of peace the technique acquired through developing types of weapons, it is essential that it be given orders sufficient to maintain its organization to meet this end.

The estimating section of the Arsenal during the fiscal year ending June 30, 1921, submitted through the channel mentioned above, and other government departments, approximately 300 estimates or bids. A list is given below of the different departments, with number submitted in each case, for which estimates were made:

Ordnance Department	174
Navy Department	18
Treasury Department	1
Post Office Department	8
Railroad Administration	1
Panama Canal	1
Geological Survey	3
Lighthouse Service	3
Engineer Corps	18
Interior Department	18
Signal Corps	4
Agricultural Department	1
Land Office	1
Air Service	9
Government Printing Office	1
Quartermaster Department	9

THE MARK VIII TANK

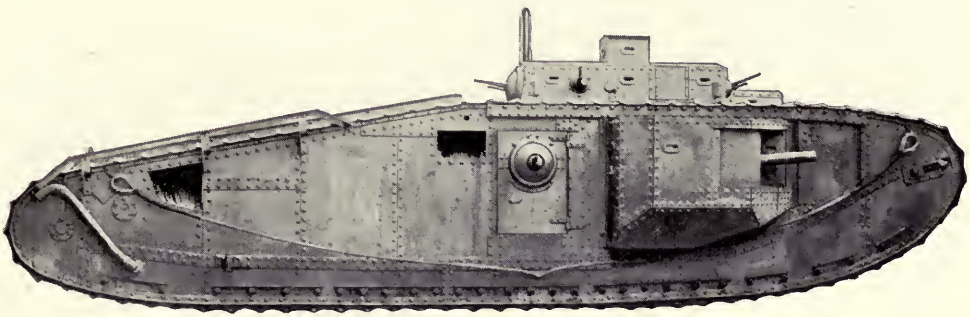
When, in the spring of 1919, the Rock Island Arsenal received an order to assemble 100 Mark VIII tanks, it was not only the largest order ever received in the history of the Arsenal, but it involved the most new problems.

Practically all of the components of the tank required in the assembly were shipped to the Arsenal. The principal parts consisted of the heavy structural pieces—i. e. armor plate, angle iron, steel girders and channels, together with a large quantity of equipment, such as tools, Hotchkiss guns,

camouflage nets, water cans, bird cages, food cans, telescopes, periscopes, festoon lamps, semaphores and various other sundries purchased from the British Government. The balance of the required material was manufactured by various outside contractors in the United States, and included Liberty motors, transmissions, compound clutches, petrol tanks, radiators, electrical equipment, and front control units.

Construction on the first of these tanks was started July 1, 1919, and the last tank was completed and ready for road test June 5, 1920, making a total of 286 days to complete the 100 tanks.

The Mark VIII tank is a fighting tank weighing about 40 tons when fully equipped and manned. It carries a complement of eight men—one



The Mark VIII tank. The order to assemble one hundred of these ponderous fighting machines, received in the spring of 1919, was the largest ever undertaken at the Arsenal. The task was completed in 286 days.

in the engine room and seven in the fighting compartment. The seven men consist of the officer in command, the driver and five gunners, two of the gunners manning the 6-pounder Hotchkiss guns and three the Browning machine guns. Storage capacity is provided for 200 rounds of 6-pounder ammunition and 20,000 rounds of calibre 30 ammunition.

IMPROVEMENT OF GROUNDS

During the period of the war only such repairs to the roads had been made and labor in the upkeep of the grounds expended as was found to be absolutely necessary. The activities carried on in connection with the Arsenal's construction projects had left the grounds adjacent to many of the new buildings in an unsightly condition. The vast quantities of war material turned in from the field and from abandoned plants had, because of lack of covered storage space, to be piled in the open in scattered areas about the Arsenal.

The clearing of these sites, the disposing of the serviceable and unserviceable material; the construction of new roads and drives; the repairing and resurfacing of many of the permanent roads (the most notable of which was that of Main avenue from the main gate to West avenue); the removal of the flagstaff, formerly occupying the center of Main avenue at its juncture with West avenue, to its present location in front of the Administra-

tion building, but out of the line of traffic; the replacing by monolithic walks of many of the earlier types of flagstone walks, which had become broken and sunken; the planting of trees and shrubs; the laying out of a park for the recreation of Arsenal employees; the extension of the exterior lighting of roads and buildings, including the placing of lights on the clock tower of the old Arsenal building at the lower extremity of the Island, and many other improvements have since been completed to restore the Island to its former beauty.

With the advent of war, precautionary measures which the government was obliged to take with respect to protection of its plant and property, to

Col. Jordan presenting faithful service badges to old employes, June 3, 1920.

the end that its capacity to produce fighting material might not be curtailed, compelled the War Department to close the Arsenal to visitors, and where heretofore general admission to holders of passes had been granted to visit the Island, it became necessary to revoke the privilege and limit the admission to those only having business on the Island; the shops and that area of the Island which was given over to manufacturing purposes was enclosed in a high non-climbable wire fence, and the regulations with respect to admission within this enclosure were rigidly enforced. With the signing of the Armistice the restriction with respect to passes imposed as a result of the war were removed; and while at this government post strict regulations are necessarily enforced, passes are generally issued to residents and visitors to the Tri-Cities who apply for same and who may desire to avail themselves of the privilege.

Savanna Proving Ground

THE purchase of approximately 13,000 acres of land for a proving ground near Savanna, Illinois, was made possible under an appropriation of $1,500,000 authorized by an Act of Congress on June 12, 1917, and work on this valuable adjunct to Rock Island Arsenal was pushed early after the United States entered the World War.

It was contemplated that this tract be used for proof-firing gun carriages manufactured at the Arsenal, some sixty miles distant, but upon the signing of the Armistice, immediate need for gun carriages having ceased, the Savanna project was used as a storage depot for the vast quantities of ordnance stores manufactured at the Arsenal during the war.

In the purchase of the Savanna lands, the United States had the services of Hugh E. Curtis, of Rock Island, Illinois, and others, through whom options were secured from the owners, and the sales were consummated

Tractors and tanks in field awaiting permanent storage. This picture, taken in June, 1919, shows but a small part of the equipment brought to Savanna after the war.

upon acceptance by the government. Out of a total of 13,146 acres, costing $890,209.15, only 320 acres were purchased direct by the government, and condemnation proceedings were necessary in the acquirement of ten acres that could not be obtained in any other way.

After the Savanna land purchase there remained from the appropriation made by Congress approximately $600,000, and this was expended in constructing necessary quarters, barracks, firing points, power house, storehouses, roads, and sewage system.

It will be realized to what extent the Savanna site was used for a storage depot from the statement that at the beginning of the fiscal year 1920 artillery material was being received at the rate of forty carloads a day. No covered storage was available, and the material was parked in the open, there being something like fifteen acres of this on hand July 1, 1920. To care for the material it was necessary to construct forty storehouses, each 96 by 400 feet, to house artillery and tractors.

Quarters of Commanding Officer at Savanna proving ground.

War With Spain

IN 1898 Rock Island Arsenal had its first real test, and it was not found wanting. At the outbreak of the War with Spain, in April of that year, the extent of the country's unpreparedness may be judged by the fact that this Arsenal, though employing only 500 men and having less than one-fifth of its shop floor space utilized for manufacturing purposes, yet was first of all the arsenals of the country in size, number of employees, variety of work performed, amount of output and monthly payroll. Inevitably, then, upon this Arsenal fell a proportionately large share of the work of equipping the suddenly augmented fighting forces of the nation.

Rock Island Arsenal, fully outfitted with machinery and completely manned, it had been estimated, should be able to equip and maintain an army of 750,000 men, but the spring of 1898 found it with a capacity of not more than one-fifth of its estimated maximum output. Congress had not appropriated sufficient funds to place it in a state of readiness for such an emergency. Nevertheless, it did not fail to do all and more than was expected of it.

The plant, which up to that time had been large enough merely to supply the small army maintained in time of peace, quickly expanded to meet the increased demands occasioned by the rapid growth of the military forces. Additional machines were installed where possible, and where hand labor only was involved in the shop operations the great floor space available in the vacant buildings was promptly filled. There was no time, and, indeed, there was no need for further shop or storehouse construction. In six months the crisis was passed.

The number of employees, which on March 1, 1898, numbered less than 500, quickly increased until a maximum force of approximately 3,000 was attained, with an expenditure of $175,000 per month in wages.

The old shop and office forces were made the nucleus of the larger organization, those especially fitted for leadership being advanced to more responsible positions and given the task of organizing and training the inexperienced help taken on in such large numbers.

The extent to which the Arsenal was developed to meet the emergency then existing may be realized by stating that the department producing the cloth equipment, which, before the Spanish-American War, operated but fifteen machines, was expanded until sixty machines were used to turn out the product. The shop which at its maximum was producing before the war 300 tin cups and 125 meat cans per day, and in which no facilities for the

manufacture of canteens existed, when finally developed, was capable of turning out 3,000 tin cups, 6,000 meat cans, and 4,000 canteens per day.

All shops and departments were expanded in like proportion, and although the force was operated continuously twenty-four hours per day, it was necessary to augment the Arsenal's output by purchases from private manufacturers of large quantities of completed articles of infantry, cavalry and horse equipments, delivered in finished condition ready for issue to the

Interior of Woodworking Shop, above; below, interior of Armory.

field. With the procurement of these articles, entailing the preparation of specifications, inviting of bids, making of awards, and the placing of the orders, the Arsenal was charged. In many cases the contractor performed only one certain operation in connection with the complete equipment, such as covering with leather of the saddle tree and the wooden stirrups, the trees and stirrups for which were manufactured and furnished the contractor by the Arsenal.

As was the case later, during the World War, the Arsenal found much to do in organizing and directing private manufacture of materials needed by the army, in assembling complete sets of equipment from parts obtained here and there and adding the final touches to make them ready for use.

Orders for large quantities of raw materials were placed, as the limited capacity of the Arsenal, operating on a peace-time basis, resulted in only a moderate quantity of materials for orders then in progress being on hand. The magnitude to which the purchases grew under the stimulus of war to meet shop production requirements may be indicated by a statement of the principal articles procured.

These included 351,400 yards dyed duck; 1,008,000 yards cotton webbing of various widths for haversacks and blanket bags; 654,000 pounds tin plate for meat cans, tin cups and canteens; 79,900 pounds brass wire; 89,500 pounds sheet brass for buckles, rings and hooks; 984,000 feet linen rope for lariats; 205,300 pounds harness leather backs; 1,262,000 square feet collar, bridle and bag leather for straps, saddles, saddle bags and carbine scabbards; 116,200 pounds copper; 1,161,900 pounds steel for gun carriages; 133,000 feet basswood and ash for saddle trees; and 690,000 feet other lumber for ammunition chests, besides many thousand pounds of minor articles.

The value of the completed articles purchased during the Spanish-American war aggregated $331,262.33. Some of the principal items of equipment, showing the proportion in which they were manufactured at the Arsenal and the quantities which were acquired by purchase, are as follows:

Articles	Manufactured at The Arsenal	Purchased from Contractors
Blanket bags	36,190	30,521
Blanket bag shoulder straps, pairs	72,428	12,980
Blanket bag coat straps, pairs	48,070	20,269
Canteens	235,553	23,952
Canteen straps, Infantry	95,671	105,059
Gunslings	64,942	86,979
Haversacks	80,588	61,878
Haversack straps	122,086	29,236
Meat cans	208,841	29,206
Tin cups	231,400	29,209

Of course the foregoing tabulation includes but a small fraction of the articles manufactured, purchased and assembled here. In the four months from April 15 to August 15, 1898, there were either made here wholly or partly, or received from contractors, 25 3.2-inch breech loading rifles and other field guns, 53 carriages for 3 and 3.2-inch guns, 210 limbers for the 3.2 and 3.6-inch guns, 120 caissons, a large quantity of artillery harness,

saddles, etc., and hundreds of thousands of miscellaneous articles. The Arsenal was the largest depot of issue in the country.

At the outbreak of the war with Spain this country was far behind the times in much of its military equipment. The old 45-calibre single shot Springfield rifle, firing with black powder, but little better than the weapons used at the close of the Civil War, was the only small arm available for use by many of the troops. About the only improvement in the army uniform made since the 60's consisted in the addition of the campaign hat and leggings. Our forces invaded the tropics clad in the regulation blue wool garments, ill-fitting and as uncomfortable as they were conspicuous

Site of old Fort Armstrong, looking down the Mississippi.

to enemy marksmen. No canteens had been made since the Civil War, the surplus left after that conflict being repaired and recovered as needed. In many other ways the equipment was far out of date.

The Spanish war not only stimulated manufacture, but brought about a marked change in type of most army goods, which led to a permanent expansion of Rock Island Arsenal's facilities and shop forces. Though the war of 1898 did not last long, it brought realization of the advanced needs of the nation in the way of defenses and was followed by an increase in the size of the standing army, which helped to insure continued activity at this Arsenal on a scale greater than that which had prevailed up to that time.

Among the permanent improvements brought about at once were the modernizing of the water power plant and the taking of steps for the manufacture of small arms. During the Spanish War, rifles were cleaned, repaired and issued, but none were made here.

Major Blunt, the Commandant, in his report for 1893 praises the spirit of the shop workers during that year. Referring to the manner in which the organization was expanded he said:

"As the force was increased, the necessity for foremen and inspectors familiar with the successive operations (for there was no time to teach and develop new men) grew with the expansion of the work. They were found among the old employees, and from their ranks a number of temporary appointments to these positions were made. They proved capable and efficient, and when necessary, as was frequently the case, worked overtime with entire willingness; in fact, the spirit they displayed permeated, with very few exceptions, the entire force, the men being apparently animated by the desire to observe the shop rules and regulations to the best of their ability and to render all possible assistance to the government in the existing emergency."

That work turned out at the Arsenal was superior to that made in private plants, and produced at a lower cost, is emphasized:

"While fairly favorable prices were obtained for the $1,110,000 worth of finished articles of ordnance stores procured under contracts, yet in all cases they exceeded, in some instances considerably so, the cost at which similar stores were at the same time being turned out at the Arsenal. * * * It must also be remembered that the articles obtained by purchase, especially at such a period, as unquestionably has been the case with most of those recently procured under contracts, are often inferior, both in material and workmanship, to those procured in the government shops. This fact was universally admitted by all the contractors who visited this Arsenal during the last few months and examined the work in progress."

Rock Island Arsenal Golf Club, maintained by civilian members from surrounding cities, but under control of Commandant, who is ex-officio president of the organization.

GROUP OF VETERAN ARSENAL EMPLOYEES.

Top row, left to right—R. C. Munson, deceased; Hiram Shunk; W. J. Pratt, deceased; W. A. P. Totten, deceased. Lower row—Emil Beck; Patrick Henehan; D. C. Thompson; W. O. Gronen, deceased.

Fort Armstrong

By JOHN H. HAUBURG

NO fort gave a greater sense of security to the pioneers of the Illinois Territory than did old Fort Armstrong. For decades the Indians of the Upper Mississippi had been in the habit of uniting their forces against their white brethren. Together they shared the honors at Braddock's defeat during the French and Indian War, and again they were united in Pontiac's War. The seizure of the Illinois country by General George Rogers Clark in 1778 was a challenge to the warriors, under British control, from Rock River to Lake Superior and from Lake Michigan to the St. Peter's river in Minnesota. In 1779, and again in 1780, there were fighting expeditions descending the Mississippi past Rock Island bent on the re-conquest of Illinois from the Americans, and among them braves from the local villages of the united Sauks and Foxes.

When the War of 1812-'14 came on, Territorial Governor Ninian Edwards wrote: "I believe there is a universal combination among the Indians. Independent of the Indians west of the Mississippi, and 300 lodges of Sioux on the Wisconsin, we may certainly count on 4,400 who can reach the settlements on the Mississippi in six or eight days, and come all the way by water. Our danger, therefore, is very evident."

The settlements of the pioneers at that time were mostly near the Mississippi, and nearly all south of a line drawn eastward from where Alton, Illinois, is now. North of this line was the wilderness, from which came Indian bands creeping upon the settlers by stealth and leaving a trail of blood. In 1813 Governor Edwards wrote: "The savages have already committed murders within the bounds of every regiment in this (Illinois) territory."

In 1814 the government took aggressive action against the Indians of this vicinity. Governor William Clark, of Mississippi Territory, headed an expedition to Prairie du Chien, Wisconsin. His first trouble came as he reached Rock Island, where he was attacked by the united Sauk and Fox. This was in the month of May. In July of the same year Lieutenant John Campbell was attacked at Campbell's Island, a few miles above Rock Island, and after a hard fought battle was defeated by Black Hawk's warriors. Early in September the same year an expedition under Major Zachary Taylor came up stream for the purpose of destroying Black Hawk's village and corn fields and to select a site for a fort. Major Taylor was decisively defeated by British artillerists and overwhelming numbers of Indians of the allied tribes at Credit Island, in plain sight of Rock Island.

Peace was signed as between Great Britain and the United States in December, 1814, but the Indians continued their depredations upon the

settlers to the south, and so, in 1815, the 8th U. S. regiment was dispatched to Rock Island to build a fort. On account of certain hindrances, they did not arrive at Rock Island until May 10, 1816, at which time, accompanied by the rifle regiment under Brevet Brigadier-General Thomas A. Smith, work on the fort was begun. As General Smith remained but a short time, the work was continued under Col. William Lawrence, of the 8th regiment, and was called "Fort Armstrong," in honor of the then Secretary of War.

Major Marsten, in 1819, reported as follows: "This fort is about 270 feet square, with three block houses mounting three six-pounders. The barracks are well constructed, of hewed timber, and are sufficiently extensive

Fort Armstrong, as originally built, from photograph of an old drawing.

to quarter three companies. The magazine is of stone, and well built. The commanding officer's quarters consists of a center two-story building 28 feet in length and a piazza built in front and rear. The fort is built on the lower point of Rock Island, and upon a perpendicular bank of limestone about twenty-five feet in height. It completely commands both channels of the river. The garrison is a great check upon the Indians in this country, and from its central situation it appears to me to be a station of considerable importance."

Of its general outward appearance, Governor Ford wrote as follows: "The river here is a beautiful sheet of clear, swift-running water, about three-quarters of a mile wide. Its banks on both sides were uninhabited, except by Indians, from the lower rapids to the fort, and the voyagers up stream, after several days solitary progress through a wilderness country on its borders, came suddenly in sight of the whitewashed walls and towers

of the fort, perched upon a rock, surrounded by the grandeur and beauty of nature, which at a distance gave it the appearance of one of those enchanted castles in an uninhabited desert, so well described in the Arabian Nights Entertainments."

Within the walls of the fort were housed a variety of interests—the commandant, the surgeon, the interpreter, the Indian Agent, the blacksmith, the soldiers, and lastly the servants. Among the last named was the colored man, Dred Scott, whose residence at Fort Armstrong provided the grounds for the legal battle carried through to the United States Supreme Court, made famous in history by the "Dread Scott decision." The blacksmith was appointed because of a stipulation in treaties with the Indians that the United States should provide such an artisan for repairing the Indians' hoes, axes, guns, etc.

The United States Indian Agent managed the affairs of the Government with the Indians. All traders must receive their traders' licenses from the agent. He would pass upon the proposed trader's qualifications, upon the financial responsibility of those who signed his bond as security, take a list of their interpreters, clerks and boatmen, the place where to trade and the tribe of Indians with whom he would trade. The agent issued passports to Indians wishing to travel to other posts, issued rations to the Indians, keeping book account of all such transactions, and paid out the thousands of dollars annually as annuities to the red men, etc. In addition to those officially connected with the fort, James D. Rishell, in a recent edition of "Black Hawk's Autobiography," says: "Around every fort on the border, from the earliest times onward, hovered a band of French, English and American traders, in sharp competition for the rich furs and peltries of the Indians." Colonel George Davenport, in fact, had a permanent trading establishment but a few hundred yards distant from Fort Armstrong.

All through the years, until after the Black Hawk War, Fort Armstrong functioned as a restraint upon the Indians. Always there were quarrels, battles, killings, stealings, between the two races over a wide range of country hereabout. Our earliest settlers would scarcely have dared to locate within Black Hawk's village had it not been for the presence of the fort. The Winnebago War, and two campaigns, 1831 and 1832, of the Black Hawk War, found the fort a refuge to the crowds of men, women, and children of settlers, as also the headquarters for the military operations which resulted in the expulsion from the old Northwest Territory of the last of a long list of patriotic, fighting Indians.

The stories of Indian treaties negotiated at Fort Armstrong; of refugee settlers in fear of massacre; of Black Hawk's attempt to blow up the fort; of the legend of the spirit, in the form of a large swan, which inhabited the cave underneath the fort; the hustle and bustle of soldiers and supplies

during the Black Hawk War, at which time the fort was headquarters for the army; the coming of General Winfield Scott, and the plague of cholera at the fort—all these and many others are subjects of too great length to be treated in the space allotted to this part of the story of the Tri-Cities and the Arsenal.

From Wm. A Meese's "Early Rock Island" we quote the following:

"May 4, 1836, the fort was evacuated and the troops sent to Fort Snelling. Lieutenant Colonel William Davenport was in command at that time, and he left Lieutenant John Beach, of the infantry, in charge with a few men to take care of the property. The fort was never re-garrisoned. November, 1836, Lieutenant Beach was ordered away and all the property was removed. From 1836 to 1838, General Street, Indian Agent, had charge of the Island, and he was succeeded by Colonel George Davenport, who had been appointed Indian Agent. In 1840 some of the buildings were repaired and an ordnance depot was established at the fort, Captain W. R. Shoemaker having charge until 1845, when the depot was broken up and the goods removed to St. Louis. Thomas L. Drum, of Rock Island, was custodian from 1845 to 1853. Ordnance Sergeant Cummings was in charge for a short time in 1853 to 1854; J. B. Danforth from 1854 to 1857, and H. Y. Slaymaker from 1857 to 1863."

Reproduction of first block house, erected in 1916 by the people of the community, for celebration of 100th anniversary of building of Fort Armstrong.

In 1855 part of the fort was reduced to ashes. The last vestiges of the fort were removed in 1863, at the time of the building of the large Armory clock tower building. It is unfortunate that part, at least, of this relic of the stirring days of the past was not left as a monument for succeeding generations.

In 1916, however, the one-hundredth anniversary of the building of Fort Armstrong was fittingly observed by a great celebration, in which not only the Tri-Cities joined, but visitors from away were here in large numbers. Among the noted visitors were Jesse Ka-ka-que, of Kansas, a great grandson of Black Hawk, and Push-e-ton-e-que, chief of the Fox or Mesquakies, together with about twenty-five other Indians from Tama, Iowa. As a part of this celebration, one of the blockhouses was restored, and is an exact replica in form of those which were placed there a century before, which, with their six-pounders, gave such comfort to the westward tide of immigration.

Squatters' Rights

ALTHOUGH claiming it from the first as a reservation for its uses, the War Department had no little difficulty in finally establishing title to Rock Island. Seldom has a tract of land no larger than the Island offered such obvious attractions to private owners, and many and devious were the schemes employed in an effort to wrest it from the control of the government. In the end it cost Uncle Sam $221,035 to buy rights of settlers who were conceded to have just claims to portions of the premises, and the water power rights are still shared by private interests.

Much space would be required to record details of this phase of the Arsenal's history. Only a brief outline will be attempted.

For many years the question whether the Island was lawfully under the control of the War Department, or subject to distribution as part of the public domain, was considered debatable. Appeal was made at various times to the Courts, to the Secretary of War, the President, and even to Congress.

In 1825, and again in 1835, the War Department formally asserted its claim to the whole of the tract. Nevertheless, a survey was made by an engineer employed by the Department of the Interior in 1832, and the land was laid out in quarter sections. After the troops were withdrawn, in 1836, squatters appeared and occupied most of the Island, with a view of preempting it under regulations applying to all public lands not set aside for some particular purpose.

In 1837 the Illinois legislature gave permission, by special act, empowering David B. Sears and John W. Spencer to construct a water power dam across Rock Island Slough, connecting the Island with the mainland at Moline. In 1842 the dam was completed, and in a short time a number of small manufacturing plants made their appearance at the head of the Island, operating with the power generated there. In 1846 Mr. Sears built another dam connecting the main island with Benham's Island, on the north and just below the head of the former. In 1848, for some reason not clear at this date, the Secretary of War wrote to the Secretary of the Interior formally relinquishing the Island for military purposes. In doing so, however, the former exceeded his powers, as court decisions and subsequent acts of the War Department indicated, and so a great many persons who claimed interests in the property were disappointed.

Most of the litigation with respect to the ownership of the premises resulted from the building of the Chicago & Rock Island railroad, which crossed the Island a quarter of a mile east of the present line, the company

claiming a tract 300 feet in width by virtue of its charter from the State of Illinois. That was in 1854. The War Department resisted the intrusion, and the matter was thrown into the courts, which eventually upheld the company, apparently more on the grounds of public need of transportation by rail than upon proof of technical rights submitted by the defendant. Subsequently the railroad was induced to remove its tracks to the extreme western end of the Island, where they are now located.

In 1850, when General Zachary Taylor was President, he issued an order for the sale of the Island. Advertisements were not printed in local newspapers, and it was charged that the move had been instigated by outside capitalists who wished, for obvious reasons, to avoid publicity. Two weeks

Grave of Gen. Rodman, guarded by guns of type he designed. These weapons were used in the monitors which crushed the hope of the Confederacy of striking a vital blow at the north from the sea during the Civil war.

prior to the date of the sale, however, people of the community awoke to what was going on, and immediately such a protest arose that the War Department felt impelled to postpone the date. Word to this effect did not reach Rock Island until the afternoon of the day on which the sale was to have taken place and an officer was on the ground prepared to receive bids. Most active in opposing the sale were those who had settled or made improvements on the Island, for they felt that their alleged rights were being placed in jeopardy. They banded together and even went so far as to post notices in the vicinity warning prospective purchasers that those appearing to submit bids would be in serious physical danger. The sale was finally called off.

Many bills were offered in Congress for the sale of all or part of the land, but most of them were defeated through the vigilance of local interests,

which from the first ardently upheld the effort to maintain the Island as a site for an Arsenal. In 1858 the War Department again was induced to consent to public sale, and bids were advertised for and received, but never opened. About this time Congress began to manifest a real interest in the utilization of the Island for military purposes, and so in 1859, when the last bill ever offered for sale of the premises came up, it was promptly voted down, and that ended the controversy.

In the meantime parts of the Island had been disposed of by act of Congress. Colonel George Davenport, the original settler in the community, was permitted to purchase at the prevailing price of $1.25 per acre the

Residence of Commandant of Arsenal.

quarter section he had claimed and improved at the time the first army post was established, and D. B. Sears was given a similar privilege with respect to the fractional tract adjacent to his flour mill at the head of the Island. The Davenport interests subsequently were re-purchased by the War Department for $40,700 and the Sears interests for $145,175.

An organized effort to get the greater part of the Island by preemption was made in 1856, when one Thales Lindsley, said to have been a clerk in the Patent Office at Washington, appeared and located a party of squatters as "dummies" upon unoccupied parts of the Island. About the same time a number of Rock Island men conceived of the same idea, namely, that of

establishing rights preliminary to purchase from the government. The result was that the population of the Island was materially increased, there being two or more claimants for each of the more desirable portions. Some violence resulted from the clash of interests. Eventually the Lindsley party was worsted. Lindsley, however, was not daunted. He remained on the ground and interested a number of local men in a plan to get the Island by grant from Congress as the site for a great state and national university. He drew up a prospectus for an institution of learning, offering

Beauty spots on the Island. Above, stone bridge leading to Officers' quarters. Below, garden near Commanding Officer's quarters.

more than one hundred courses of study, some of which never had been, and perhaps never will be, taught in any school. A bill to carry out the scheme was actually presented to Congress. When Lindsley appealed to Senator Stephen A. Douglas for aid, that statesman, evidently apprised of the many devices already employed with a similar purpose, is quoted as having exclaimed: "For heaven's sake, sir, draw something thicker than a lace veil over your scheme!"

Apparently that sealed the doom of the project, for it did not get much farther. Lindsley made one other attempt to improve his fortunes through an application to the Illinois legislature for a water power grant involving rights in the south channel, already claimed by the Moline Water Power Company, but met with defeat.

Private claim to water power rights in the Rock Island slough never was seriously contested by the War Department. The original dam, built in 1842, by Sears and Spencer, was taken over a few years later by Pitts, Gilbert & Pitts, an eastern firm. Power was supplied to a number of factories from the first, but the project was not placed on a permanently paying basis till after 1865, when it passed into the hands of the newly formed Moline Water Power Company. This concern entered into an agreement by which it surrendered all rights to the government, obtaining in return a perpetual grant of the use of one-fourth of the power developed, with the option of use of surplus power, above the requirements of the Arsenal, at a specified rental. The government agreed to bear all expense of development and maintenance. This agreement stands to this day, and the Moline Water Power Company is still in existence, selling power to the Peoples' Power Company, which provides for distribution in the community.

Flag pole in front of Commanding Officer's headquarters.

Building the Original Arsenal

THE first formal move to set Rock Island apart for military purposes was made in 1825, when the Secretary of War notified the Commissioner of the General Land Office to reserve the land from sale. Ten years later Congress approved of an examination of sites for a proposed western Armory, which was made by a commission of army officers.

In 1840 the Commandant of the Arsenal at St. Louis was directed by the Chief of Ordnance to ascertain what advantages Rock Island might have for ordnance purposes. The report, submitted by Captain William Bell, gave an intimate description of the Island and adjoining community, praising the transportation and water power facilities, and stating there were but two responsible private claimants at that time prepared to dispute ownership with the government.

The following year Congress again ordered an investigation to determine the site for a western Armory to be located on a waterway. Three army officers spent eighteen months in the work and made a voluminous report, which gave enthusiastic praise to the natural advantages of Rock Island for the proposed purpose. "Articles of subsistence of all kinds, for man and beast," the report said, "are abundant, and these are remarkably cheap. The site is exceptionally healthy, as evidenced by reports now on file in the office of the Surgeon General * * * covering a period of more than twenty years, during which the number upon the sick list at Fort Armstrong was proportionately less than at any other post in the western country."

Other reports of similar nature were made to the War Department from time to time, up to the date when Congress finally authorized the beginning of construction of permanent buildings. A. C. Dodge, chairman of the Senate Committee on Public Lands, writing to the Secretary of War in 1854, said:

"Rock Island, as you are well aware, has long been regarded by a large portion of the people of the Mississippi valley as an advantageous site for an Arsenal of construction."

From the earliest days of the white men in this vicinity there was a strongly defined sentiment in the upper river valley, and especially in the more immediate locality, in favor of maintaining and developing the Island for military uses. Time after time, the records show, when ownership of the land by the War Department was threatened, or the authorities at Washington wavered in their intentions along this line, champions of the

Arsenal project who were able to make their voices heard and influence felt in the national capital came forward. Disposition toward hasty adverse action was repeatedly halted and the subject kept open till a more deliberate consideration of its merits finally won the day.

By Act of Congress, approved July 11, 1862, a national Arsenal was located on Rock Island, and $100,000 was appropriated for buildings. The original intention was to use the establishment for storage and repairs only.

Major C. P. Kingsbury was assigned as the first Commandant, coming on the scene in 1863. In that year the first permanent building, the one at

Rear view of original shops. Insert, old stone storehouse at west end of Island. This was the first permanent buiding erected. With its tall clock tower it is now the most conspicuous object connected with the Island, as viewed by transients. It is now kept chiefly as a relic.

the west end of the Island, with its clock tower provided with 12-foot dials facing in four directions, was begun. This structure was designed as a storehouse, and for years has been used only incidentally as circumstances demanded. A few years ago it was condemned and ordered torn down, but the order was rescinded in response to local sentiment. The building is not now a part of the Arsenal, properly speaking.

General Thomas J. Rodman succeeded Major Kingsbury in command in 1865 and remained in charge till his death, which took place in 1871. His remains were buried on the Island. Under General Rodman, who designed some of the best heavy guns used in the Civil War, those with which the monitors were armed being among them, comprehensive plans for the Arsenal were elaborated. In accordance with these, the institution was constructed and remained with only minor additions up to the date of beginning of the World War.

Two rows of great shops, one on either side of the main avenue extending east and west, and located on the highest ground the Island afforded, were included. Most of the building was done under General Rodman and his successor, General D. W. Flagler. The shops on the south side of the avenue were designed for an Arsenal and those on the north for an Armory.

The center shop on the south side is a foundry and blacksmith shop and the one on the north a rolling mill and forge shop. Both are one-story structures, with monitor roofs. Other shops are two stories, with basement.

Ground plans for all ten buildings originally were alike. Each has two parallel wings, 60x300 feet, 90 feet apart, being U-shaped, with the closed end on the avenue. This leaves a court 90x238 feet. The porticos at the sides project 12 feet and are 60 feet wide, while those at the ends are of the same width, but project only two feet. During the late war the inside porticos of the two end buildings on each side of the avenue were joined, to give more floor space and facilitate handling of materials.

Walls of all buildings are entirely of stone, most of it obtained from quarries near Joliet, Illinois. Average thickness of the walls is 3 feet 4 inches for the first story, 2 feet 10 inches for the second, and 2 feet 4 inches for the third. An enormous amount of material was used. In Shop A, for instance, were placed 30,115,800 pounds of stone, 3,132,800 pounds of brick, 2,199,646 pounds of iron, 1,331,500 pounds of lumber, 362,500 pounds of slate, 200,000 pounds of plaster and 26,000 pounds of copper. Total area of each shop is a little more than one acre. Much of the construction work was done by day labor directed by specially trained officers, and reports of Commanding Officers comment upon the saving of money effected and better structures secured through this plan.

These shop buildings, supplemented with three fire-proof storehouses, barracks, Commanding Officer's quarters, subaltern officers' quarters, general offices and fire engine house, all of equally durable and commodious character, provided facilities for housing the largest and most effective Arsenal and Armory in the country. So much room was there, in fact, that only a part of the space afforded was utilized for manufacturing purposes and fitted out with machinery until after the European War broke. Good

use was made of it during the Spanish War flurry, but most of the shop expansion then was of a temporary nature.

Under General Rodman the second Rock Island bridge was begun and work was prosecuted in the improvement of the water power. A reservoir giving sufficient water facilities for the needs of the institution was constructed and Shops B and C and the Commanding Officer's quarters were nearly completed.

Under General (then Captain) Flagler most of the other buildings were constructed as originally planned. The Moline highway bridge was built, a sewer system installed, the main avenues were partially improved, and miles of driveways about the Island laid out. Most of the trees, other than those of the natural forest remaining, were planted at this time. The second bridge over the main channel of the river was completed and opened for public use.

Construction lagged under Colonel T. G. Baylor (1886 to 1889), and Colonel J. M. Whittemore (1889 to 1892). Under Colonel A. R. Buffington (1892 to 1897) the Rock Island bridge was rebuilt to bear heavier traffic, this being the chief item in the way of improvements.

Under Colonel S. E. Blunt as Commandant the Arsenal rendered valiant service to the country in the Spanish-American War. Reference of a more extended nature under this heading is made elsewhere. The capacity of the manufacturing plant was enlarged by the installation of machinery and shop fixtures. Congress, stirred by the urgent need of the times, made tardy provision for the equipping of the Armory and the manufacture of army rifles. Money for this purpose was voted in 1899, and in the following year work was begun with a view of increasing the water power plant, modernizing it with electricity and placing three of the shop buildings in Armory row in readiness for men and machinery. Eventually the Armory attained a capacity of 250 rifles daily, but after the immediate needs of the army were met the output was cut down to about half the full capacity. For some years before the World War little was done at the small arms plant, but it sprang into new life with the entrance of the country into the great struggle, the number of employees being brought up to 3,000 in this department alone.

The vast additions to shops and storehouses, together with the many other improvements brought about by the late war, were made under Colonel George W. Burr, Colonel L. T. Hillman, and Colonel Harry B. Jordan.

What the Arsenal Cost and Its Present Valuation

EXPENDITURES for all purposes in connection with Rock Island Arsenal during the 58 years of its existence total $32,591,920.94. Present estimated value of improvements is $18,310,525.00. With grounds, buildings and war material and machinery stored therein inventoried at more than $250,000,000, the government has a larger investment in this Arsenal than at any other center in the United States, outside of Washington, D. C.

In the table below there are included under "Construction, Repair and Preservation" not only the cost of the buildings when new, but also the sums required for their repair and maintenance; the government share of expense in connection with the various bridges; and under "Water Power" the sums disbursed for acquisition of power rights and their sub-

Filtration plant. The Arsenal's water supply is taken from the Mississippi river, being purified by modern methods.

sequent development; and under "Machinery," the cost of all that has been installed, including the earlier purchases, now either worn out or obsolete and no longer in use. The totals, therefore, represent actual expenditures, and, taking no account of appreciation or depreciation, do not represent present values. Against the various items it is proper to charge off the benefit that the country has enjoyed from the operation of the Arsenal, which, of course, is an item that cannot be reduced to figures.

COST OF BUILDINGS, WATER POWER, MACHINERY, ETC., AT ROCK ISLAND ARSENAL FROM ITS ESTABLISHMENT TO JUNE 30, 1920

Commandant	Period	Construction, Repair and Preservation of Buildings, Roads, Sewers, etc.	Construction, Repair and Preservation of Bridges	Rock Island Water Power Dikes and Dams	Machinery and Shop Fixtures	Total
Maj. C. P. Kingsbury	1863-65	$ 231,384.72	$	$	$	$ 231,384.72
Gen. T. J. Rodman	1865-71	1,855,455.62	6,664.33	440,506.35		2,302,626.30
Gen. D. W. Flagler	1871-86	4,137,675.24	160,894.74	591,911.47	92,000.00	4,982,481.45
Col. T. G. Baylor	1886-89	201,200.00	96,250.00	322,000.00	44,000.00	663,450.00
Col. J. M. Whittemore	1889-92	69,000.00	182,318.48	101,000.00	25,000.00	377,318.48
Gen. A. R. Buffington	1892-97	47,250.00	315,125.50	67,500.00	47,500.00	477,375.50
Col. S. E. Blunt	1897-07	404,344.50	173,877.02	317,792.00	1,153,521.26	2,049,534.78
Lt. Col. F. E. Hobbs	1907-11	100,964.36	139,172.55	78,500.00	121,107.15	439,744.06
Col. Geo. W. Burr	1911-18	4,880,701.11	171,992.85	168,167.45	1,031,820.30	6,252,681.71
Col. L. T. Hillman	1918-18	5,859,540.86	25,197.76	438,537.24	4,476,962.59	10,800,238.45
Col. Harry B. Jordan	1919-20	2,138,749.70	52 375.54	314,643.79	1,509,316.46	4,015,085.49
		$19,926,266.11	$ 1,323,868.77	$ 2,840,558.30	$ 8,501,227.76	$32,591,920.94

Cafeteria, erected to serve thousands of war workers.

For the single year from July 1, 1919, to July 1, 1920, the cost under the four headings was as follows:

Construction, Repair and Preservation of Buildings, Roads, Sewers, etc.	$858,231.57
Construction, Repair and Preservation of Bridges	33,573.30
Rock Island Water Power, Dikes and Dams	80,608.61
Machinery and Shop Fixtures	393,893.33
Total	$1,366,306.81

Two hundred and three items are included in the list of Arsenal improvements, 168 being of a permanent nature and the balance temporary. Of course not all of the buildings originally constructed are now standing, a number of the smaller and less substantial sort having been salvaged. By

far the most valuable of the present structures are those of modern design erected during the last few years, as an inspection of the following itemized estimate will show:

VALUATION OF QUARTERS AND BUILDINGS

PERMANENT BUILDINGS

ADMINISTRATIVE BUILDING

1—Main office	$ 39,000.00	$ 39,000.00

OFFICERS' QUARTERS

2—Commanding Officer's quarters	100,000.00	
3—Assistant Officer's quarters No. 2	36,000.00	
4—Assistant Officer's quarters No. 3	33,000.00	
5—Assistant Officer's quarters No. 4	23,750.00	
6—Assistant Officer's quarters No. 6	13,500.00	
7—Assistant Officer's quarters No. 7	12,000.00	218,250.00

ENLISTED MEN'S QUARTERS

8—Stone barracks	127,500.00	
9—Sergeant's quarters No. 10	4,000.00	
10—Sergeant's quarters No. 23	5,000.00	
11—Sergeant's quarters No. 24	4,000.00	
12—Sergeant's quarters Nos. 11 and 12, double	10,600.00	
13—Casual Personnel quarters No. 25, 26 and 27	15,000.00	
14—Quarters No. 28 at chicken farm	1,000.00	
15—Quarters Nos. 19, 20, 21 and 22	20,300.00	
16—Contagious Hospital (wash room for quarters)	3,000.00	190,400.00

MISCELLANEOUS BUILDINGS

17—Post Hospital	10,000.00	
18—Bowling alley (south of welfare building)	5,500.00	
Post exchange and welfare building	11,500.00	
19—Garage, Commanding Officer's quarters	450.00	
20—Garage, quarters No. 2	250.00	
21—Garage, quarters No. 3	180.00	
22—Garage, quarters No. 4	280.00	
23—Garage, quarters No. 6	280.00	
24—Garage, quarters No. 7	250.00	
25—Chicken house, Commanding Officer's quarters	900.00	
26—Chicken house, No. 2 quarters	300.00	
27—Chicken house, No. 3 quarters	280.00	
28—Chicken house, No. 4 quarters	280.00	
29—Chicken house, No. 6 quarters	380.00	
30—Chicken house, No. 7 quarters	300.00	
31—Frame bakery	2,800.00	
32—Post stables	9,000.00	
33—Green houses, Commanding Officer's quarters	9,720.00	
34—Barn west of caddy house	1,800.00	
35—Band stand, National Cemetery	500.00	54,950.00

MANUFACTURING SECTION

36—Shop "A"	600,000.00
37—Shop "B"	600,000.00
38—Shop "C"	650,000.00
39—Shop "D"	600,000.00
40—Shop "E"	280,000.00
41—Shop "F"	295,000.00
42—Shop "G"	375,000.00
43—Shop "H"	403,500.00
44—Shop "I"	328,500.00
45—Shop "K"	377,200.00
46—Shop "L"	1,916,804.00
47—Chemical Laboratory L-1	150,000.00
48—L. court	75,000.00
49—Shop "M" and oil storage, Group No. 4	2,225,000.00
50—Shop "O"	150,000.00
51—Shop "Q"	125,000.00
52—Shop "R"	450,000.00
53—Tinning and Plating shop	23,000.00
54—Paint shop	55,000.00
55—Shop connections A-C, B-D, G-I and H-K	360,000.00
56—Central heating plant	610,000.00
57—Boiler house "C"	23,500.00
58—Boiler house shop "F"	35,000.00
59—Tractor laboratory	17,700.00
60—Rifle range	5,021.00
61—Truck garage	35,500.00

MANUFACTURING SECTION—(Continued)

62—Filtration and ice plant	54,500.00	
63—Stone Reservoir	30,100.00	
64—Pump house, north shore	7,000.00	
65—Pump house L-17	1,500.00	
66—Water tank (high tank)	21,400.00	
67—Parkerizing plant	9,700.00	
68—Oil storage, Group No. 5 (filling station)	3,900.00	
69—Proving grounds	2,000.00	
70—Power dam (old)	294,500.00	
Power dam (new)	748,000.00	
71—Truck shed (at truck garage)	5,000.00	
72—Dry kiln (old)	11,129.00	
73—Dry kiln (new)	4,125.00	
74—Dry kiln (wheel spoke)	247,500.00	
75—Dry kiln (gun stock)	374,000.00	
76—Unloading platform (shop "A" court)	4,900.00	
77—Fulminate fuse exploding vault	90.00	12,585,069.00

STOREHOUSE SECTION

78—Storehouse "A"	147,520.00
79—Storehouse "G"	60,600.00
80—Storehouse "I"	31,300.00
81—Storehouse "K"	119,700.00
82—Storehouse V-1	78,000.00
83—Storehouse V-2	108,000.00
84—Storehouse V-3	108,000.00
85—Storehouse V-4	108,000.00
86—Storehouse V-5	108,000.00
87—Storehouse V-6	108,000.00
88—Storehouse V-7	108,000.00
89—Storehouse V-8	108,000.00
90—Storehouse V-9	108,000.00
91—Storehouse V-10	86,333.00
92—Storehouse V-11	86,333.00
93—Storehouse V-12	86,334.00
94—Storehouse V-14	65,000.00
95—Storehouse V-15	65,000.00
96—Storehouse W-I	1,560,000.00
97—Storehouse X-1	29,277.00
98—Storehouse X-2	29,277.00
99—Storehouse X-3	29,277.00
100—Storehouse X-4	29,277.00
101—Storehouse X-5	29,277.00
102—Storehouse X-6	29,277.00
103—Storehouse X-7	29,277.00
104—Storehouse X-8	29,277.00
105—Storehouse X-9	29,277.00
106—Storehouse X-10	29,277.00
107—Storehouse Y-1	29,277.00
108—Storehouse Y-2	29,277.00
109—Storehouse Y-3	29,277.00
110—Storehouse Y-4	29,277.00
111—Storehouse Y-5	29,277.00
112—Storehouse Y-6	29,277.00
113—Storehouse Y-7	29,277.00
114—Storehouse Y-8	29,277.00
115—Storehouse Y-9	29,277.00
116—Storehouse Y-10	29,277.00
117—Storehouse Z-1	29,277.00
118—Storehouse Z-2	29,277.00
119—Storehouse Z-3	29,277.00
120—Storehouse Z-4	29,277.00
121—Storehouse Z-5	29,277.00
122—Storehouse Z-6	29,277.00
123—Storehouse Z-7	29,277.00
124—Storehouse Z-8	29,277.00
125—Storehouse Z-9	29,277.00
126—Storehouse Z-10	29,277.00
127—Old Arsenal building	200,000.00
128—Lumber shed (old)	14,000.00
129—Lumber shed (north new)	8,500.00
130—Lumber shed (center new)	8,500.00
131—Lumber shed (south new)	8,500.00
132—Oil storage, Group No. 1 (old building)	15,000.00
133—Oil storage, Group No. 1 (new building)	20,000.00
134—Oil storage, Group No. 1 (office)	6,500.00
135—Oil tank, Group No. 2	9,700.00
136—Oil house and tanks, Group No. 3	29,600.00
137—Oil house, "AA" (storehouse)	23,000.00
138—Storehouse "M" (for steel)	173,000.00
139—Central tool storage No. 2	4,800.00
140—Primer dry L-4	8,130.00
141—Powder blending L-5	7,055.00
142—Gun cotton dry L-6	2,320.00
143—Cave fulminate L-7	1,980.00

STOREHOUSE SECTION—(Continued)

144—Cave fulminate L-8	1,980.00	
145—Smokeless powder L-9	1,968.00	
146—Smokeless powder L-10	1,968.00	
147—Black powder L-11	1,968.00	
148—T. N. T. L-12	3,280.00	
149—Smokeless powder L-13	1,968.00	
150—Smokeless powder L-14	1,968.00	
151—T. N. T., L-15	3,280.00	
152—T. N. T., L-16	3,280.00	
153—Magazine A-1	15,000.00	
154—Scale house	3,000.00	
155—Tool shed, east side of Y-5	600.00	4,708,675.00

MISCELLANEOUS BUILDINGS

156—Mess hall (cafeteria)	93,000.00	
157—Davenport house	500.00	
158—Fire and police station	27,500.00	
159—Guard house Ft. Armstrong ave., Station B	5,000.00	
160—Guard house Davenport bridge N. E., Station C	250.00	
161—Guard house, main gate, Station D	2,500.00	
162—Guard house, Moline bridge	500.00	
163—Guard house, Rock Island viaduct, south end, Station A	600.00	
164—Outside Department	26,196.00	
165—Golf Club house	50,000.00	
166—Shelter station (street car) Main and West avenue	320.00	
167—Shelter station (street car) R. I. avenue	320.00	
168—Loading platform south of central heating plant	2,700.00	129,386.00
Grand total valuation of permanent buildings		$18,005,730.00

TEMPORARY BUILDINGS

ADMINISTRATIVE BUILDING

169—Office building No. 2	$ 61,000.00	$ 61,000.00

MILITARY BUILDINGS

170—Sheep shed (east of V-12)	160.00	
171—Chicken farm (except quarters)	3,730.00	
172—Ward hospital	11,300.00	
173—Infantry stables, cow barn, hay shed	6,500.00	
174—Sheds at post stables	2,625.00	
175—Barracks B	37,000.00	
176—Barracks C	37,000.00	
177—Barracks D	45,000.00	143,315.00

MANUFACTURING SECTION

178—Shed court yard, A-C annex	1,800.00	
179—Spray painting shed (east of V-10)	500.00	
180—Receiving room G and I court	2,040.00	4,340.00

STOREHOUSE SECTION

181—Storehouse V-12A	8,000.00	
182—Oil shed (east of storehouse "G")	1,200.00	
183—Storehouse "BA"	19,000.00	
184—Storehouse "GA"	19,000.00	
185—Storehouse "KA"	19,000.00	
186—Storehouse "MA"	19,000.00	
187—Machine gun storage	1,500.00	
188—Office "XYZ"	500.00	
189—Machine storage shed	2,200.00	
190—Shed in raw material yard	275.00	
191—Shed north of truck garage	800.00	
192—Shed back of storehouse W-I	300.00	
193—Shed in scrap lumber yard	200.00	
194—Shed (office north of V-10)	250.00	299,880.00

MISCELLANEOUS BUILDINGS

195—Laboratory sheds	3,500.00	
196—Shed west of Z-1	275.00	
197—Caddy house (at golf club)	240.00	
198—Bicycle shed, shop B	150.00	
199—Bicycle shed, shop D	150.00	
200—Bicycle shed, shop F	150.00	
201—Bicycle shed, shop H	150.00	
202—Bicycle shed, shop M	150.00	
203—Bicycle shed, Storehouse W-I	150.00	4,915.00
Grand total valuation of temporary buildings		$ 304,795.00
Grand total valuation of permanent buildings		18,005,730.00
Grand total valuation of all buildings		$18,310,525.00

Military Prison In Civil War

DURING the Civil War, 1861-1865, Rock Island became the site of a military prison. It was the policy of both the Union and the Confederacy to confine prisoners of war as far as possible from the battle lines. This Island answered very well the need of the government in this connection, being hundreds of miles north of the Mason and Dixon line, and comparatively easy to guard. Besides, the War Department already claimed the ground and there was abundant room.

Extensive barracks for prisoners were built during the summer of 1863. Construction of buildings was in charge of Captain C. A. Reynolds, U. S. Quartermaster's Department, and they were intended to accommodate 13,000 men.

Barracks were placed on the north side of the Island near the river front and about midway between the east and west ends. The prison took

Map of Island drawn in 1870, showing location of prisoners' barracks in central part near north side. At that time, it will be observed, improvements were few and the land was nearly all covered with trees.

the form of a rectangle, covering about twelve acres. The four sides faced the main points of the compass, the northeast corner being opposite the lower end of Pappoose Island. There were fourteen rows of one-story buildings, extending east and west, six in a row. Each was 100 feet in length and 20 feet in width, with windows in the sides and doors in the ends. They were not plastered or painted, but otherwise were well constructed and as comfortable as the use to which they were put demanded that they should be. A kitchen was located in one end of each building. Double-

decked bunks were provided for sleeping purposes, each building housing 120 men. A main avenue divided the seven rows on the north from the seven on the south. This avenue was 50 feet wide.

Though intended to house 13,000 prisoners, there never were that many in the prison. The death rate was high, 1,961 men expiring of disease in a period of two years. A few prisoners escaped and several were killed in the attempt to do so.

East of the main shop buildings and south of Main avenue is the cemetery in which Confederate dead lie buried. They were interred in long trenches, bodies being placed in wooden boxes, laid about two feet apart. At the head of each grave is a permanent marker, giving name, regiment and state of deceased.

Farther east is the cemetery for Union soldiers. Here are buried about five hundred men. Many of these served at the local post, but the burial grounds are open to receive the remains of any American soldier. At this cemetery it is the custom to hold services each Memorial Day, exercises being under the auspices of the veterans' organizations of the vicinity.

Both burial grounds are surrounded by trees and guarded by old cannon, and the premises are carefully maintained.

Entrance to Confederate cemetery, where the remains of 2,000 prisoners were interred.

The Arsenal's Water Power

THE water power of the Rock Island rapids was one of the main factors which determined the selection of its present site for the location in the Mississippi valley of an Arsenal for the manufacture of military supplies. Jefferson Davis, while Secretary of War, wrote in 1854 to the United States Senate Committee on Public Lands as follows:

"I have the honor to acknowledge the receipt of your letter of the 10th instant, asking the views of this department as to the expediency of selling the military reservation at Fort Armstrong, on Rock Island, Illinois, as contemplated by Senate Bill No. 195.

"The water power available at that place, and the communication by water and railroads, projected or in the course of construction, concur with other circumstances in rendering Rock Island one of the most advantageous sites in the whole western country for the construction of an Armory or an Arsenal for the manufacture of wagons, clothing, or other military supplies."

Water power in the south channel, near the head of the Island, was developed by private enterprise in 1843, long before there was any clearly defined plan to erect a manufacturing Arsenal at this point. When the War Department started the erection of factory buildings the Moline Water Power Company already had acquired such power rights as a charter from the State of Illinois could confer, and had a considerable investment in its plant. Power was being supplied to a number of nearby factories.

After extended negotiations, the Power Company, in 1867, subscribed to an agreement relinquishing its rights to the government, being pledged in return the free use of one-fourth of the power derived from existing or subsequent development of the premises, together with the privilege of renting whatever surplus there might be after the needs of the Arsenal were supplied. The government, under this compact, assumed all cost of development and maintenance. In pursuance of the terms laid down, the government erected a dam wall parallel to the Illinois shore of the channel south of the Island, with numerous flume openings, and later constructed, farther along this channel and closer to the site chosen for the Arsenal shops, a second dam, known as the government dam.

In 1895 the government closed all the openings in the first dam wall, known as the upper dam, and erected a new dam, located at the west of the first structure, where the openings were concentrated and from which power is now being developed.

The abandoned tail-race resulting from the closing of the openings in the upper dam wall was filled, and over a section of the filled portion the D. R. I. & N. W. railroad is now operating its line, extending service to the adjacent factories in Moline.

Fall in the river from the foot of the Island to the head of the original wing dam at the upper end was about seven and one-half feet, but in 1899 the dam was extended longitudinally up stream about two and one-half miles, to what is known as the head of Duck Creek chain, and the head of water was increased to about fourteen feet, at rest, or more than eleven feet when in operation. Commenting upon the success of this improvement,

Present power dam, viewed from below.

Major Blunt, under whose administration as Commandant the work was done, in an address to Tri-City business men in 1901, stated that there had been provided "a volume of water which it was recently found could not be materially diminished, even when all the gates in the two power dams were simultaneously opened."

Following the improvement of conditions above the dam, the channel below it was excavated, the tail-race was widened and deepened and the united channel, extending from the juncture of the canal south of Sylvan Island (the tail-race from the upper dam) with that of the government dam to the point where it reaches the deep water below the lower point of the Island, was straightened.

Forty-one openings for water wheels were provided in the dam at the time the government reconstructed it in 1890, but only eight of the number of openings provided were utilized and turbines installed therein. Because of the type of wheel and the low head of water, but 35 horse-power was developed from each wheel, the total being but 280 horse-power. This

amount, however, sufficed for the limited operations of the Arsenal prior to the Spanish-American war. When that conflict broke it was necessary to supplement the water power with steam power, which was provided at considerable additional expense.

Needs of the War Department for additional facilities for the manufacture of small arms became apparent at the time of the outbreak of the war with Spain, as it was found that the equipment at the Springfield Armory, which prior to this time furnished a sufficient output for the requirements of the army on a peace footing, was wholly inadequate to meet the needs on a war footing. As buildings and other facilities were already available at Rock Island Arsenal, the original plans contemplating use of the north row of shops for Armory purposes, it was natural to turn to this plant for help.

The south or Arsenal row of shops required a minimum of 600 horse-power and the Armory row, fully equipped, would need as much more. To supply the combined requirements of the Arsenal and give a liberal surplus over minimum needs, 14 new turbines of improved design were installed at the power plant. Each was capable of developing from 125 to 150 horse-power, depending upon the stage of water, or from 1,750 to 2,100 horse-power, taken together. In addition, at the time of reconstruction of the dam, provision was made for installing seven more wheels, which would bring the total horse-power developed up to from 2,500 to 3,000, which was deemed sufficient to meet the Arsenal's needs, as far as it was possible to anticipate them at that time.

The installation in 1899-1900 provided for fourteen 50-inch Leffel wheels and two 500-kilowatt three-phase alternating current generators, with their exciters. The wheels transmitted their power through heavy bevel gearing to a long, horizontal shaft on which the generators were mounted and arranged so that either generator could be connected with either exciter and operated by either of the two groups of seven turbines as separate units, or the whole plant could be connected and operated as a single unit. Some five years later this equipment was supplemented with six more wheels of similar type and a 650-kilowatt generator was installed, thereby completing the plant as planned at the time the dam was reconstructed.

Distance from the source of power at the dam to its place of application in the shops is considerable, being about two thousand feet. Transmission of power was one of the earlier problems of the Arsenal. General Rodman proposed the use of compressed air, while General Flagler installed a continuous shaft. As neither method was feasible, a wire cable was resorted to as being most reliable and economical. Power was transmitted by this cable over successive sheave wheels from the dam to the shops, the sheave wheels being supported by aerial towers. When the plant was modernized, immediately after the Spanish-American war, the old cable transmission line was replaced by electricity.

To carry the transmission wires to the shops a concrete subway or tunnel was constructed from the dam to the two shops at the eastern end of the north and south rows. Cross tunnels were run under each row of buildings, and brackets secured to the tunnel walls, along which the power cables were laid. All tunnels are lighted with incandescent lamps set at the top of the arch, and are seven feet in height and wide enough to allow comfortable passage from end to end, so that conductors can be inspected at any time. Separate motors were placed in the shops for independent operation of the different main lines of shafting, for elevators, etc.

In 1914, after it had been in operation 15 years, frequent repairs and mounting cost of upkeep of the water plant led to consideration of plans for

Interior of power house, showing big electric generators.

replacement of the various units. The water wheels, which were the best available when they were installed, already had become obsolete and were far less efficient than the modern turbine. The combination of inefficient wheels, long shaft and bevel gearing involved a great loss of power. The working head of water averaged eleven feet or less, and it required three feet to merely turn the generators, so that the plant, with a rated capacity of 2,200 horse-power, actually was generating only from 1,300 to 1,400 horse-power, or 65 per cent of its supposed capacity. It became evident that the demands resulting from increased consumption of electrical energy in the shops, together with new uses constantly being found for it, would soon render the power plant entirely inadequate. During the fiscal year ending June 30, 1913, approximately 3,000,000 kilowatt hours of electricity

was consumed, and it was necessary to purchase some power from private sources.

The sundry civil appropriation act approved July 1, 1916, among other things, contained a provision setting aside $500,000 "toward providing facilities for manufacturing field artillery ammunition, at a total cost not exceeding $1,250,000, under a contract or contracts, or otherwise, in the discretion of the Secretary of War." The estimate forming the basis for this appropriation included the project for increasing the water power at Rock Island Arsenal. It was found that the most economical and satisfactory method of doing so was to construct a new concrete dam in the rear of and at an angle with the existing dam, and to install therein eight large generator units and two exciter units of modern type, giving, with an eleven foot operating head, approximately 3,760 horse-power. This was done, the improvement being ready for use June 1, 1919.

The present plan consists of eight alternators with a capacity of 430 KVA each at 80 per cent power factor, generating 2,400 volt, three phase, 60-cycle current. Generators are of the vertical type, direct connected to water turbines.

Underground distribution was installed from the new power plant to the sub-stations in the various shops, distribution being at 2,300 volts, stepped down to 550 volts at the sub-stations for operation of motors, etc. Each sub-station is arranged for one power feeder, one light feeder and an emergency feeder which is capable of caring for both the power and lighting at that particular sub-station. The feeder distribution and transformers installed are capable of taking care of 6,600 KVA, which was about peak load at the Arsenal during the late war.

Acts of Congress making appropriations for the development of water power at Rock Island Arsenal are as follows:

Act of June 27, 1866	$ 100,000
Act of June 8, 1868	80,000
Act of March 3, 1869	150,000
Act of July 15, 1870	200,000
Act of March 3, 1871	200,000
Act of June 10, 1872	110,000
Act of March 3, 1873	18,000
Act of June 23, 1874	5,400
Act of March 3, 1881	50,000
Act of August 7, 1882	100,000
Act of March 3, 1883	20,000
Act of July 7, 1884	18,500
Act of Oct. 2, 1888	275,000
Act of August 30, 1890	101,000
Act of July 1, 1898	45,000

Act of March 3, 1899	21,350
Act of March 3, 1901	130,500
Total	$1,624,750

Extraordinary repairs to the Rock Island Arsenal water power have called for the following appropriations.

Act of October 2, 1888	$ 25,000
Act of August 18, 1894	30,000
Act of March 2, 1895	37,500
Act of June 4, 1897	28,150
Act of June 6, 1900	97,000
Act of May 27, 1908	28,500
Total	$ 246,150

One of the many original forest trees seen along driveways on the Island.

Improvement of the Rock Island Rapids

CLOSELY linked with development of water power for use of the Arsenal has been the improvement of the Rock Island rapids for purposes of navigation. Measures taken to create a head of water sufficient for Arsenal needs have been of incidental help in deepening the channel of the stream and furnishing slack water navigation over the swiftest and most dangerous part of the rapids. The Island's shores form the bank of the present power pool, and almost inevitably will perform a similar function in any future hydro-electric development that may be attempted.

In the early days of Mississippi river navigation the Rock Island rapids constituted a serious and at times an almost insurmountable obstacle to boats. Fourteen miles in length, from LeClaire down to the present Rock Island bridge, with a fall of 20 feet at low water, there always was a strong current. Fourteen chains of upheaved limestone crossed the stream in that distance, and the channel was tortuous.

Prior to the beginning of improvements the rapids were, in extremely low stages, impassable to boats and barges of the larger type. In 1863, and again in 1864, it was necessary for a time to transfer freight and passengers around the rapids by rail. Boats frequently were wrecked and groundings on the rocks were almost of daily occurrence. Rafts of logs and lumber often were broken up.

The first steamboat to pass over the rapids arrived at Fort Armstrong May 23, 1823. It was the "Virginia," from the Ohio river, and passed on up to the Galena river and the mouth of the St. Peter, now known as the Minnesota river.

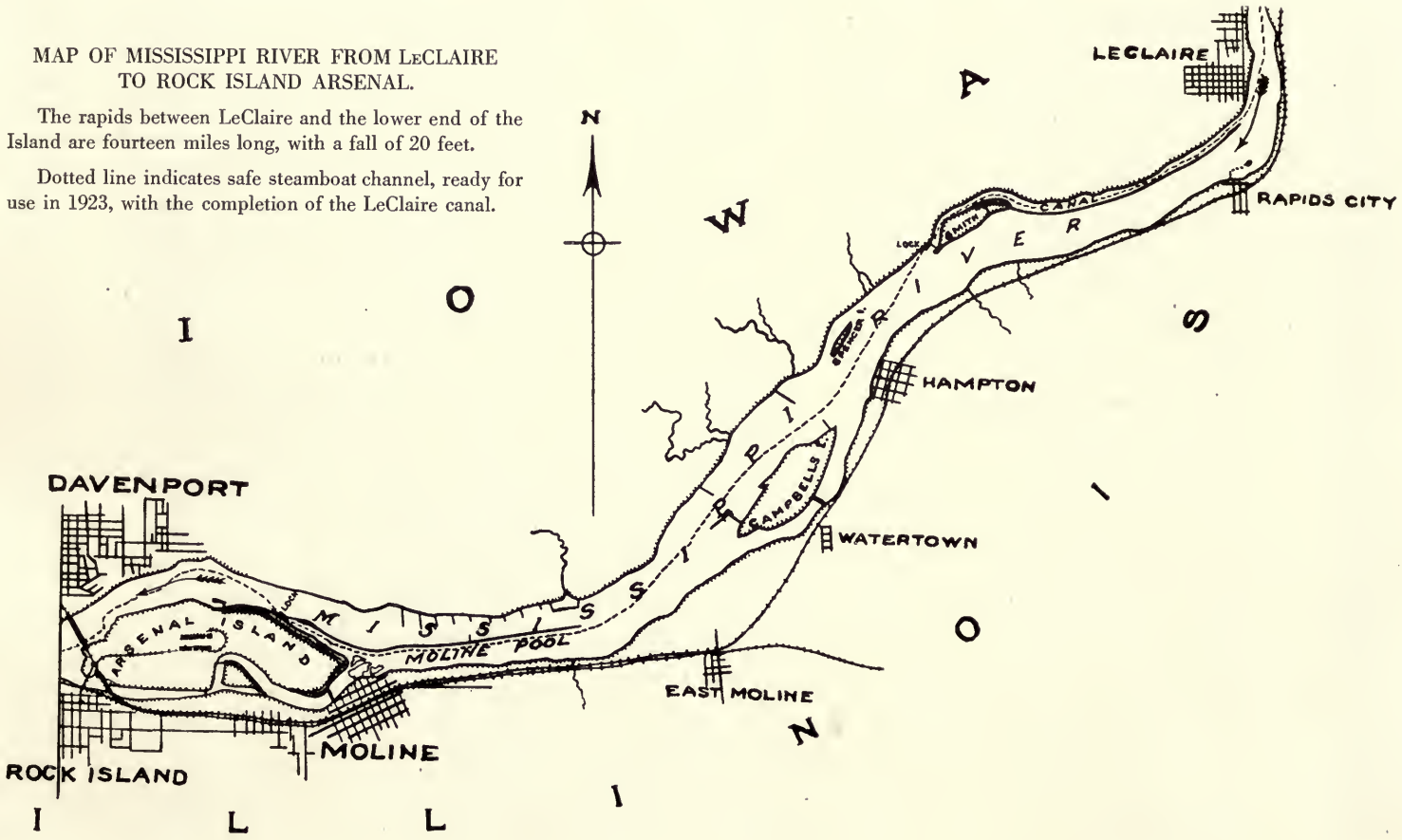
Surveys were made at an early date, but Congress did not see fit to provide funds for improvements for a number of years. The first survey was made by Lieutenant Napoleon B. Bufort, in 1829. A second one was made in 1836. Robert E. Lee, then a lieutenant, and later head of the Confederate armies, made the third survey, with a view of removing some of the navigation hazards from the channel. That was in 1837, but it was 1857 before any actual work was done. In that year some rock was taken out, and then there was a total lapse of activities for another decade. Since 1867 work has been fairly continuous in one form or another, and the present year is expected to see the original object practically realized, and the rapids made as safe for river craft as any other part of the stream now considered navigable.

First excavation of rock was done inside of cofferdams. Later chisel boats and dredges were employed, the chisel, weighing about three and

MAP OF MISSISSIPPI RIVER FROM LeCLAIRE TO ROCK ISLAND ARSENAL.

The rapids between LeClaire and the lower end of the Island are fourteen miles long, with a fall of 20 feet.

Dotted line indicates safe steamboat channel, ready for use in 1923, with the completion of the LeClaire canal.



one-half tons, breaking up the rock, which was scooped up by the dredges. This method gave way to that of drilling and blasting, with removal of rock by dredging, as is now done.

First appropriation for removal of rock from the channel was made by Congress in 1852. During the years from 1867 to 1882 efforts of the river engineers were directed to the opening of a channel 200 feet in width, excavated in the rock. This work was done in carrying out a project approved by Congress in 1879, calling for a channel of a minimum depth of four and one-half feet from the mouth of the Missouri to the head of navigation. Subsequently, in 1907, Congress passed an act providing for a minimum depth of six feet in the section of the river indicated, and later projects on the rapids have conformed to this standard.

Construction of closing and wing dams to confine the channel and aid in deepening it was commenced in 1890. Up to that time spoil from excavation was deposited in various places outside of the channel.

Practically all improvements in the rapids have been made by use of government-owned equipment, operated by day labor, and directed by War Department engineers.

The power pool at Moline was originally created by building a rock dam about one-half mile up the river, parallel with the shore, from Benham's Island, north of and just below the head of Rock Island. This was extended three miles farther upstream in 1898. Another dam connected the two islands named. These dams virtually cut off the city of Moline from benefits of river transportation, since boats entering the pool were forced to go around the head of the longitudinal dam.

The River and Harbor Act passed in March, 1905, provided for the remedying of this situation. It appropriated money for the building of a lock and dam at the foot of Benham's Island, thus obviating the detour to gain access to the channel, and also set on foot the excavation of a 250-foot passageway for boats, four feet deep, throughout the entire length of the pool. The lock and dam were built in 1907, the cost being $386,000. Later the longitudinal dam was reconstructed with a concrete core to prevent leakage, and a concrete apron to check erosion in high stages of the river, when the dam became a spillway, relieving the pool of surplus water. By stopping leakage and making a slight extension of the main dam, together with the building of back water dams, the head of water in the pool was increased one and one-half feet, giving a channel depth of approximately six feet and conforming to the general plan for river improvement.

With the completion of this work, practically all river traffic was diverted through the pool and lock, thus avoiding the worst part of the rapids. A difficult stretch of river remained, however, between LeClaire and

what is known as the Hampton pool. Lateral dams had been built to raise the water, but the channel was narrow and the current swift.

In 1888 maps were prepared by a board of engineers with a view to the creation of a longitudinal canal connecting the head of the rapids with the Hampton pool, three miles below. With the adoption of the six-foot channel project the subject was further investigated, and it was determined to build the canal on the Iowa side. Plans called for a longitudinal dam to the head of Smith's Island, which was to form the south bank for about a mile, thus obviating much work. The height of the dam was to be six and one-half feet above low water at the upper end, to serve as a spillway in floods, and the lower part was to be above high water mark. Below the island a dam and lock were provided for. The original estimate of cost was $1,282,797.

Work was begun in 1914 and is being continued at the present time. Delay has been caused by failure of Congress to make consecutive appropriations, but it is expected that the lock will be ready for use at the opening of the 1923 navigation season.

The LeClaire canal project involved construction of cofferdams and the removal of much rock in the upper section. This has made the work slow and costly. The lock at the lower end of the canal is 80 feet wide and 350 feet long, with a lift of six feet at low water.

Upon completion of this project the Rock Island rapids will no longer be an obstruction to navigation. A safe channel with a depth of not less than six feet and not less than 200 feet wide, with no swift water, and with two locks capable of passing the largest boats and barges, will be available.

But a small part of the potential power of the Rock Island rapids is developed by the present hydro-electric plant, and considerable attention has been given to the subject of extending the scope of the project. Maps and plans have been prepared looking to furthering the undertaking both by the government and by private interests.

Flow of the Mississippi at this point varies from 20,000 to 200,000 cubic feet per second, depending upon the stage of water, and this, with a 20-foot fall, forms the basis for varying estimates of the power possibilities involved.

It is apparent that any increase of water power utilization that takes place holds important possibilities for Rock Island Arsenal, provided the work is done by the government, or under government supervision, and the plan of operation be so arranged that the needs of the Arsenal shall be fully provided for before any diversion of power for private use is permitted.

Bridging the Mississippi

UP to the time when the present Chicago, Rock Island & Pacific Railroad Company completed its bridge from Rock Island to the Davenport shore, in 1856, the channel of the Mississippi never had been spanned. The remains of the south pier of the first bridge to cross the stream may yet be seen on the Island shore, about a quarter of a mile above the present structure.

This original bridge was of wood, of what is known as the Howe truss type. It was a single decker, with room for but one railroad track. There were six spans, the draw span being 250 feet in length. The first locomotive, pulling a few empty cars, crossed April 21, 1856.

Compared with later triumphs of the bridge builder's art, this old structure was crude and inadequate, and was doomed to demonstrate its shortcomings in a variety of ways. Fifteen days after it was opened the steamer "Effie Afton," bound down stream, crashed against the draw span pier, took fire and burned, igniting the span, which also was consumed. The hull of the boat drifted a couple of miles down stream and sank. Other craft subsequently came to grief at this point, and rafts frequently met with disaster. There was much property loss and some loss of life.

Constructed, as it was, at the height of the usefulness of the steamboat, when a score of packet lines plied the upper river and hundreds of rafts of logs and lumber were brought down from the north each season, the bridge was not popular with the river men. As a matter of fact, it greatly complicated the feat of successfully negotiating the already dangerous rapids, being built just below the most difficult stretch of the rock-infested channel. To make matters even worse, the draw span was not set squarely across the current.

In the spring of 1868 the ice, in moving out, caught the first pier from the Iowa side and pushed it down stream 25 feet. A few weeks later a windstorm from the west rolled the draw span over on its side, so that it hung suspended on the pier. These various accidents made it necessary practically to rebuild the bridge piecemeal.

The accident to the "Effie Afton" led to a lawsuit in which the owners of the boat endeavored to recover damages from the bridge company. Abraham Lincoln was one of the attorneys for the defense. Lincoln contended that the right to navigate a stream was no more fundamental than the right to cross it, and that, therefore, the fact that the steamboat antedated the bridge in this case added nothing to the merits of the plaintiff's cause.

The jury disagreed, which was regarded as a triumph for the defense, in view of adverse public sentiment.

Under the administration of Col. Jordan as Commandant at the Arsenal steps were taken to permanently repair the old pier of the original bridge, which had been retained as a memorial of the first bridge crossing the Mississippi, and which was crumbling away. The weakened parts were bound up with concrete and a metal tablet with suitable inscription was placed upon it.

When Rock Island was set aside for Arsenal purposes in the early 60's the question of bridges became one of much importance. Means of access to the surrounding cities must be provided, and the government at once

Original Rock Island bridge, viewed from the Illinois shore below the Island. This structure was opened in 1856, and was the first thrown across the Mississippi at any point.

took charge of the situation. An agreement with the Rock Island road was effected for the removal of its tracks to the western end of the Island, and the joint construction by the railroad and government of a new steel bridge on the site of the present one across the main channel.

Work on the second bridge was completed in February, 1872, and it was turned over to the War Department four months later. Originally this bridge was intended for use in transaction of government business only, and not as a thoroughfare between the Illinois and Iowa shores. There was much local criticism of the course pursued, but Captain Flagler, the Commandant, who had just improved and opened the present Fort Armstrong avenue, threw the main bridge open to the public shortly after it was placed in his hands.

The second bridge was 1,550 feet long, five spans and draw, and cost about a million dollars. It was a double-deck, two-track bridge, with footpaths on the sides below, the same as the bridge of this day.

Heavier traffic, especially use of larger locomotives and railway cars, made it necessary to replace the second bridge with a new steel structure in 1894-95. The old piers were used. Ralph Modjeska, son of the famous actress, and to this day one of the leaders in his profession, was the engineer in charge of the work.

The second Rock Island bridge, completed in 1872.

The trusses of the present bridge, which provides for street railway, as well as railroad, vehicle and foot traffic, are calculated to carry a moving load of 11,360 pounds per lineal foot, 8,000 on the railroad floor above and 3,360 pounds on the lower floor. The draw span, one of the heaviest in existence at the time it was built, weighs 2,500,000 pounds. The first span at the north is 260 feet long, the second, third and fourth are 220 feet, and the fifth 260 feet. The draw span, which touches the Island shore, is 368 feet in length, with an opening on either side for river traffic of 162 feet. The railroad approach span on the Iowa side is 200 feet in length and that at the south end about 100 feet.

The first bridge connecting the Island with the City of Rock Island was a wooden affair, and belonged to the municipality. This the government bought soon after the construction of the Arsenal was begun. In the spring of 1868 this bridge was carried away by the ice and was succeeded, as soon as an appropriation for the purpose could be secured, by one of steel. This later was elevated at the south end and a viaduct built across the railroad tracks on the river bank.

Moline owned the original bridge connecting that city with the Island. The government bought this in 1868, and replaced it with the present steel bridge in 1873.

The railroad and street railway bridges from the Island to the Illinois shore are under control of, though not built by, the government.

All told Congress has appropriated $1,310,550 for bridges at Rock Island, as follows:

Act of March 2, 1867	$ 200,000
Act of July 25, 1868	100,000
Act of March 3, 1869	500,000
Act of July 15, 1870	300,000
Act of March 2, 1889	35,000
Act of March 28, 1896	96,000
Act of June 11, 1896	10,200
Act of May 27, 1908	9,350
Act of March 4, 1909	60,000
Total	$1,310,550

The present Rock Island bridge. Insert, Frank E. Robbins, who has been in the service of the government for 42 years, and for 29 years has been superintendent of the bridge.

Being the only artery for use of street cars, vehicles and pedestrians between the Rock Island and Davenport shores, the Rock Island bridge now bears a traffic which at times tests the capacity of the lower deck. When heavy movements of freight are on the railroad tracks, there, also, are scenes of much activity.

Records of traffic, both across the bridge and up and down the river, have been kept from the beginning, and a comparison of the figures from year to year is enlightening. While travel across the stream has grown rapidly, there has been a rapid falling off in the use of the river. The record for the fiscal year ending June 30, 1921, follows:

	Total Number	Average Per Day	
Engines	36,385	100	
Passenger cars	98,568	270	
Freight cars	469,334	1,286	
Street cars	162,688	445	
Pedestrians	810,142	2,220	
Vehicles	3,296,064	9,030	
Steamboats	1,607	7	(for 8 months)
Barges	1,466	6	(for 8 months)

Compare the foregoing with the figures for the fiscal year ending June 30, 1874:

	Total Number	Average Per Day	
Engines	3,725	10	
Passenger cars	9,088	25	
Freight cars	120,775	331	
Pedestrains	338,786	938	
Vehicles	290,940	797	
Steam boats	1,672	7	(for 8 months)
Barges	444	2	(for 8 months)
Rafts, lumber and logs	583	2½	(for 8 months)
Street cars	None		

The maximum load for a freight car in 1874 was 30,000 pounds; in 1921 115,000 pounds. The 583 rafts that passed through the bridge in 1874 had an average of 2,000,000 feet, board measure, or a total of 1,166,000,000 feet. In the seventies and early eighties, there were 17 side-wheel packets plying

between St. Louis and St. Paul. All of those packets were about on a par with the "St. Paul" and "Quincy" of late years.

It will be noted that the records do not indicate the decline in steamboat traffic that actually has taken place since 1874. The truth is that in 1921 no packets passed through the draw, craft listed being mostly sand dredges and government boats and barges working on the rapids, with a few excursion steamers, which ply the upper river irregularly during the summer months.

Remains of the Island pier of the first bridge, now preserved as a historic relic.

Passenger Transport

LAYING out driveways on the Island and building bridges connecting with Rock Island, Moline and Davenport did not fully solve the question of passenger transportation to and from Rock Island Arsenal. Workers lived in the surrounding cities, some of them several miles from the scene of their employment, so walking was out of the question, and in the early days it was impossible for all to arrange for private vehicles.

The situation was met at first through the use of horse-drawn hacks, carrying as many men as a team could conveniently haul, which collected passengers at given points, at designated periods in the mornings, and returned them to their homes in the evenings. Each driver kept his own list of passengers, and compensation was arranged on mutually agreeable terms.

With the coming into general use, early in the 90's, of the bicycle, this became the favorite means of getting to and from work for many of the men, especially the younger ones, though the hacks continued to operate till after the coming of the street car, which was under the administration of Colonel Blunt. Then the Tri-City Railway Company obtained a franchise to lay tracks on the Island extending from the southern viaduct on Fort Armstrong avenue at the west, past the shops, and connecting with the Rock Island-Moline lines by means of a bridge across Sylvan Water at Forty-second street, Rock Island. Thereafter cars were operated on regular schedule over this line, with special cars starting from various points in the three cities to collect workers in the morning and returning them to their homes at the close of the day.

Under Colonel Blunt, also, bicycle paths were laid out for the safety and convenience of those using this method of traveling back and forth, but these became obsolete with the coming of the automobile into general use, and occupying part of the building sites when the vast expansion of the late war was begun, were discontinued. Many Arsenal workers now use their own automobiles, though the street cars continue to operate and do the greater part of the passenger carrying, and the bicycle still is in favor with some.

In time of war the privilege of the public to visit the Arsenal is of necessity closely curtailed, but ordinarily restrictions are removed to the limit considered compatible with the security of the institution. Guards are stationed at the entrance gates both day and night, and passes are required to gain admittance.

Since the main driveway through the Island offers the shortest route between Moline and Davenport, it was to have been expected that efforts

would be made to have it declared a public thoroughfare. The War Department, however, has consistently refused this concession, on the ground that it would practically remove restrictions upon visitors and would greatly complicate the work of guarding the valuable government property at the Arsenal. Then, too, wear and tear on the two miles of paving which is maintained by the War Department has been an item given consideration. A similar policy was adopted with reference to the street car line across the Island, which carries no through passengers.

Regulations respecting the care of property are strictly enforced. Visitors are not allowed to picnic on the Island, or to destroy shrubs, flowers or trees, or to kill wild birds and animals, which numerously inhabit the wooded tracts. Timber squirrels are common, as are imported pheasants, which find the premises a haven of refuge. Among the squirrels are many of the black variety, which are not native to the locality.

Fort Armstrong avenue. Public highway between bridges at west end of Island and sole traffic artery between Illinois and Iowa shores at this point.

The Military Museum

FOR the visitor, nothing at Rock Island Arsenal holds greater interest than the war museum, one of the most complete of its kind in the country. It contains nearly every fighting implement used by man in the last century, and some weapons common as far back as Revolutionary times. It occupies a space 60x216 feet on the first floor in the southwest corner of Shop A, and the need for more room is increasingly felt to house the exhibits constantly being added to it.

Prior to the World War the museum was relatively small, but since that struggle it has acquired a great variety of new material, including many trophies captured from enemy armies. These help to make the collection one of surpassing interest. During the war many of the exhibits were boxed and stored, while the others were placed on view in the old storehouse near the south end of the main bridge. This was done to give more floor space for manufacturing purposes.

In the museum one can trace the history of the development of the art of war even as far back as the day of the spear and the bow and arrow, for there are included in the collection the weapons of the primitive Indian of the locality and the wild natives of the Philippines, as well as tools of destruction evolved by the so-called civilized nations. Along with the spear and the machete are samples of gaspipe cannon, wrapped with wire to give greater strength, that occasionally have been employed since the age of gunpowder arrived, to meet emergencies arising from lack of facilities to manufacture more effective weapons. Some of these guns were used against our own soldiers in the Philippine insurrection.

Of cannon there is a variety most complete, from the old brass gun that a man could carry about and the swivel guns of yore, down to quick-firing and destructive implements used in the late war. So far it has been impracticable to show the heavier siege guns. There are, however, a number of mortars and howitzers of larger bore. Among the guns are some that were made for use by the navy.

It would be difficult to conceive a more complete collection of small arms than the one here shown. There are revolvers of every type used since gunpowder was invented, and rifles of every description. The old flintlocks are here, and so are the deadly automatic rifles and the sawed-off shotguns which did such execution in the World War. Not alone are shown weapons made for army use, but scores of arms of private manufacture, especially of the latter part of the nineteenth century, are included. Here one sees the weapons with which the pioneers of this country established their reputations for accurate shooting, and which exterminated the buffalo and forced the Red Man into subjection. Guns used by foreign armies can be seen and studied.

The machine gun exhibit is one of much interest, and includes many trophies over which sanguinary struggles took place in France. With the machine guns is a sample repair kit made by the Germans, and well illustrating their trait of care and thoroughness in preparing for war. There is also a German war map, drawn with infinite pains and delineating every topographical and other feature that could be of use in planning and executing military maneuvres. Anti-aircraft guns, armor, gas masks, bombs used by aircraft, torpedoes, and most of the devices used in trench warfare are on view.

Included in the artillery is an exact duplicate of the French gun which fired the first shot from French soil at the advancing Germans. There are several guns in camouflage, and a field gun and caisson of an earlier type appears, hitched to horses completely harnessed and apparently ready for marching orders.

Of leather goods there is a great variety, showing the products of this department of the Arsenal, which was the largest of its kind in the world. Saddles, harness and the various straps and other devices for which an army has use, are all to be seen. There is also a wall exhibit of personal equipment sets made at the Arsenal, some of them shown in course of manufacture, the effect of each separate operation being indicated. In one corner is a Liberty motor set up on a block.

It is the policy of the department to add to the exhibits of this museum from time to time, and to maintain it open to the public, admission free, subject only to such rules and regulations as are necessary in the circumstances.

Arsenal Museum, showing a few of the many war relics on view.

The Old Davenport House

THE early history of the Island, from the founding of Fort Armstrong to the establishment of the Arsenal in 1862, is largely a record of contention for possession of the premises. It was apparent from the first that the land would some day be very valuable, and many coveted the more desirable parts of it. Influx of settlers was accelerated at the close of the Black Hawk war, which put an end to Indian depredations and assured the safety of the white man. After that there was no real need for the presence of troops in the locality.

Fort Armstrong, however, was maintained until May 4, 1836, and two years later Colonel George Davenport was appointed Indian agent and remained in charge until 1840. Colonel Davenport was the first white settler in

Home of Col. Davenport, as it stands today.

the vicinity of the Island. He was identified with it from 1815 to July 4, 1845, when he was murdered in his home by a band of robbers and horse thieves. The murderers escaped unrecognized, but were afterward arrested, and three of them—Aaron Long, John Long and Granville Young—were hanged on October 19th, of the succeeding year.

Colonel Davenport was an Englishman, born in Lincolnshire, in 1783. After many hard experiences at sea, he reached New Orleans in 1806. Dur-

ing his Island life he became famous as a trader, winning the confidence of the Indians.

The house in which Colonel Davenport was murdered stands near the northern shore at the lower end of the Island. It was built in 1833, and is by far the oldest structure at the Arsenal. Up to the year 1906 no repairs had been made, and it was gradually falling into decay, but in that year the Old Settlers' Association of Rock Island County, Illinois, secured permission from the government to undertake the work of repair and to maintain this historic building for the future.

An organization known as the Colonel Davenport House Association has been formed for the purpose of fostering the local traditions and history with which the Davenport home is so closely attached. To each of the four patriotic societies of the Tri-Cities—the Colonial Dames, the Daughters of the American Revolution, the Old Settlers' Associations of Rock Island County, Illinois, and Scott County, Iowa, and the Davenport family—one each of the four rooms in the old house has been definitely assigned.

The preservation of the Davenport house was made possible through the efforts of Mr. Phil Mitchell, of Rock Island, Miss Alice French and C. A. Ficke, of Davenport, and the Misses Catherine and Naomi Davenport.

Looking toward Davenport from west end of Island.

Arsenal Commandants

THE four commanding officers at Rock Island Arsenal connected with the World War time and the period of readjustment immediately following were Colonel George W. Burr, Colonel L. T. Hillman, Colonel Harry B. Jordan, and the present Commandant, Colonel D. M. King. All saw active service abroad, Colonel, now General, Burr, in charge when America entered the struggle, and upon whose shoulders fell the responsibility of placing the Arsenal on a war-producing basis, having been relieved in early 1918, promoted and detailed to service abroad; Colonel L. T. Hillman, who went across with the first expeditionary forces, and returning was assigned to command of the Arsenal to succeed Colonel Burr, and Colonels Harry B. Jordan and D. M. King, also rendering distinguished service abroad until the Armistice was declared. The army careers of these officers is of particular interest at this time.

COLONEL D. M. KING, ORDNANCE DEPARTMENT

Colonel D. M. King, the present Commandant of Rock Island Arsenal, was born in Ohio, November 5, 1869. In 1889 he entered the West Point Military Academy, and was graduated in June, 1893.

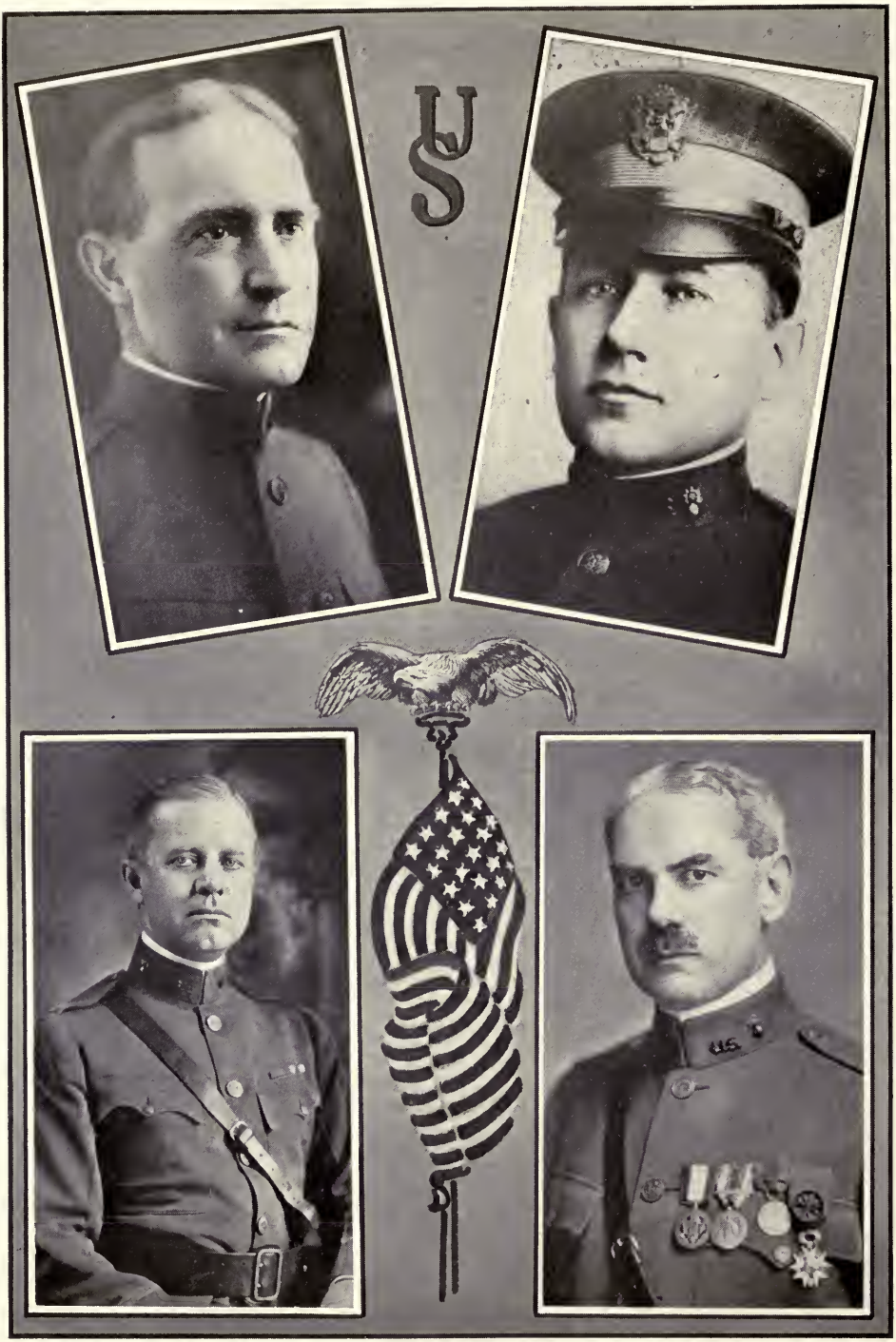
After his graduation he was stationed in Washington, D. C., from 1893 to 1896, and from 1896 to 1899 he was instructor at the U. S. Military Academy. In 1898 he was commissioned First Lieutenant, Ordnance Department.

Colonel King, in July, 1917, upon entrance of the United States into the World War, was on the staff of Colonel Burr at the Rock Island Arsenal and was designated by the Chief of Ordnance to design, equip, construct and obtain the necessary commissioned and enlisted personnel for the maintenance of all ordnance material in France. This was a $20,000,000 project, and required approximately 275 officers and 20,000 skilled enlisted men for the operation of the shops and repair facilities.

The main shops were located at Mehun, France, and about 9,000 men were employed at the date of the Armistice. Some twenty smaller plants were established, maintained and operated at artillery training camps and elsewhere in France.

Colonel King received the Distinguished Service Medal and the Legion of Honor was conferred upon him by the French Government.

Colonel King has been in command of Rock Island Arsenal since June 3, 1921.



ROCK ISLAND ARSENAL COMMANDANTS DURING THE WORLD WAR PERIOD

Upper—Left, Col. George W. Burr, 1911-1918; right, Col. Leroy T. Hillman, March to December, 1918.
Lower—Left, Col. Harry B. Jordan, 1918-1921; right, Col. D. M. King, 1921.

COLONEL HARRY B. JORDAN, ORDNANCE DEPARTMENT

Colonel Harry B. Jordan, Ordnance Department, is a native of Kentucky, being born in the Blue Grass State February 26, 1876. He was appointed to West Point Military Academy from Washington in June, 1897, and graduated with the rank of Second Lieutenant of Cavalry in February, 1901. In April of the same year he was transferred to the Fourteenth Cavalry, and in July, 1903, was made a First Lieutenant in the Ordnance Department. In July, 1905, he was transferred back to the Cavalry with the same rank, and was detailed as Captain of Ordnance one year later. His transfer back to the Cavalry came the following year, but he returned to the Ordnance Department in 1908. He was then assigned to Rock Island Arsenal until June, 1912, when he was again detailed to the Cavalry. In 1913 he returned to the Ordnance Department and has been in that branch of the service since. In 1915 he was promoted to the rank of Major in the Ordnance Department, and shortly before the United States entered the war he was made a Lieutenant-Colonel.

When the Expeditionary Forces of the United States went abroad, Colonel Jordan was sent to France, where he was placed in charge of the construction of Arsenals. For more than one year he was so engaged and was then brought back to the United States, with the rank of Colonel, and placed in charge of the Artillery Section in the office of the Chief of Ordnance.

He assumed command of the Rock Island Arsenal on January 20, 1919, and continued to serve in this capacity until June 1, 1921, when he was relieved of its command and assigned to duty as Chief Ordnance Officer, American Forces in Germany, stationed at Coblenz.

COLONEL LEROY T. HILLMAN, ORDNANCE DEPARTMENT

Colonel Leroy T. Hillman, Ordnance Department, was born in Warren, Ohio, April 30, 1879, and was appointed to the United States Military Academy from Indiana in June, 1896. Upon his graduation he was appointed a Second Lieutenant of Artillery in 1900, and received the First Lieutenancy in the same branch in 1901. He was detailed to the Ordnance Department with the same rank in 1904, and was made a Captain of Ordnance in 1906. He was transferred to the Artillery in 1908. His rank of Captain in the Artillery dated from January, 1907. He was again transferred to the Ordnance Department in 1909, and in 1911 received his Majority.

During his time as Major he was appointed a member of a special examining board for officers who applied for detail in the Ordnance Department. His promotion to a Lieutenant-Colonelcy came in September, 1917, when he was sent to France, representing the Ordnance Department. After six months service abroad, he was returned to the United States, where he received his full Colonelcy and was assigned to succeed Colonel George W.

ROCK ISLAND ARSENAL COMMANDANTS PRIOR TO THE WORLD WAR

Upper row—Left to right, Col. F. E. Hobbs, 1907-1911; Col. S. E. Blunt, 1897-1907; Col. A. R. Buffington, 1892-1897.
Middle row—Col. J. M. Whittemore, 1889-1891; Col. T. G. Baylor, 1886-1889.
Lower row—Gen. D. W. Flagler, 1871-1886; Gen. T. J. Rodman, 1865-1871; Maj. C. P. Kingsbury, 1863-1865.

Burr as Commandant at Rock Island Arsenal. He remained in command of the latter post until his death, which occurred at the Arsenal on December 29, 1918.

BRIGADIER-GENERAL GEORGE W. BURR

Brigadier-General George W. Burr entered United States Military Academy June 15, 1884, and on graduation was given a Second Lieutenant's commission, June 11, 1888; he was made a First Lieutenant of Ordnance January 10, 1893; commission as Captain followed on April 7, 1899; he was commissioned a Major June 25, 1906, and a Lieutenant-Colonel October 23, 1910.

In 1911 General Burr was assigned to command of Rock Island Arsenal, and while in command of the post was promoted to the rank of Colonel. General Burr served as Commandant of the Arsenal until February, 1918, when he was transferred to Washington, where he became the representative of the Ordnance Department in purchasing heavy artillery and munitions from the British Government and was assigned as Chief Ordnance Officer on the staff of Major-General Biddle in England. On August 8, 1918, he was appointed Brigadier-General in the National Army and assigned as Chief of the Engineering Division of the Ordnance Department. In December, 1918, he was appointed Assistant Director of Purchase, Storage and Traffic, and on March 5, 1919, was promoted temporarily to the grade of Major-General. He now holds the rank of Brigadier-General and is Chief of the Field Service in the office of the Chief of Ordnance.

COMMANDING OFFICERS, ROCK ISLAND ARSENAL, FROM DATE OF ITS ESTABLISHMENT, JULY 11, 1862, WITH INCLUSIVE DATES OF SERVICE

Major C. P. Kingsbury	July 27, 1863 to June 14, 1865
Major T. J. Rodman	Aug. 3, 1865 to June 7, 1871
Captain D. W. Flagler	June 15, 1871 to May 12, 1886
Colonel T. G. Baylor	May 12, 1886 to Nov. 8, 1889
Colonel J. M. Whittemore	Nov. 8, 1889 to Mar. 14, 1891
Colonel A. R. Buffington	Jan. 21, 1892 to Mar. 3, 1897
Captain S. E. Blunt	Mar. 3, 1897 to Aug. 3, 1907
Lieutenant-Colonel F. E. Hobbs	Aug. 3, 1907 to Apr. 12, 1911
Lieutenant-Colonel George W. Burr	July 7, 1911 to Feb. 15, 1918
Colonel L. T. Hillman	Mar. 4, 1918 to Dec. 29, 1918
Colonel Harry B. Jordan	Jan. 20, 1919 to June 1, 1921
Colonel D. M. King	June 3, 1921 to

COLONEL JOHN T. THOMPSON, U. S. A., RETIRED

Colonel John T. Thompson (retired), whose activities as an Ordnance Officer were closely allied with the development of the small arm, first served at Rock Island Arsenal in 1891 as a Lieutenant of Ordnance under Colonel Buffington, then its Commandant, and again in 1904, when as a Captain, he was assigned as Assistant Officer to the Commanding Officer, Colonel S. E. Blunt, in charge of the manufacture of the rifle, the production of which, following the establishment of the small arms plant at the Arsenal, was to be undertaken in quantity.

Colonel Thompson entered the U. S. Military Academy July 1, 1878, and graduated in 1882 as a Second Lieutenant of Artillery; his promotion to the grade of First Lieutenant followed January 20, 1889; in December, 1890, he was transferred to the Ordnance; he was promoted to Captain June 15, 1898; to rank of Major on June 25, 1906; Lieutenant-Colonel on January 21, 1909, and Colonel October 30, 1913.

When war broke out Colonel Thompson retired and became associated with the Remington Arms Co. in the manufacture of rifles (Model 1914) for the British Government. On our own entrance into the war Colonel Thompson re-entered the service as Chief of the Small Arms Division, office of the Chief of Ordnance, and was the prime moving spirit in the production of the Model 1917 U. S. Rifle. He later became Director of Arsenals, in which capacity he was charged with directing for the Chief of Ordnance the operations of the Arsenals as manufacturing plants and military establishments, and handling of all matters of general administration.

At the cessation of hostilities he again retired. Since that time his energy has been devoted in perfecting the Thompson sub-machine gun, of which he is the inventor. This weapon, the inventor claims, considering its small size, the number of blows it can hit in a given time, is the most effective portable weapon yet invented. The Thompson sub-machine gun is being manufactured by the Auto Ordnance Corporation, of New York.

MAJOR-GENERAL C. C. WILLIAMS

The present Chief of Ordnance, Major-General C. C. Williams, entered the U. S. Military Academy on June 17, 1890, graduating June 12, 1894, as a Second Lieutenant of Artillery. He was commissioned a First Lieutenant of Ordnance October 4, 1898. On June 14, 1902, he was promoted to the rank of Captain, and it was during the period of his Captaincy, some two years later, that he was assigned to duty at Rock Island Arsenal as assistant to the officer in charge of work in the Armory shops, at that time being equipped for the manufacture of the rifle.

While on duty as Inspector of Ordnance at the works of the Bethlehem Steel Co., which assignment followed his relief from duty at the Arsenal,

he was promoted to the rank of Major. He was made a Lieutenant-Colonel April 6, 1915. When the expeditionary forces of the United States were ordered to France, General Williams was one of the first ordnance officers sent abroad, where he served as Chief Ordnance Officer, A. E. F. On August 5, 1917, he was appointed Brigadier-General in the National Army, and on May 17, 1918, was assigned to duty as Acting Chief of Ordnance. On July 16, 1918, he succeeded Major-General William Crozier as Chief of Ordnance, the latter having on that date been appointed Major-General in the line of the Army.

Col. John T. Thompson, retired, who during the war served as chief of the small arms division and director of Arsenals, and who was twice stationed at Rock Island Arsenal.

Other Arsenals

TO give an adequate understanding of the relative importance of Rock Island Arsenal, it is necessary to furnish a basis of comparison with other similar institutions in the United States. There are, altogether, eight Arsenals, an Armory and a Reserve Depot under the jurisdiction of the Ordnance Department, which is charged with the task of providing and caring for all military supplies. Arsenals and Armories are manufacturing establishments, while depots have only facilities for storage. Rock Island Arsenal is the largest plant of them all, and its uses are more diversified, the others specializing in certain kinds of ordnance stores. This Arsenal also produces small arms, a work carried on nowhere else except at the Springfield Armory, and, besides, its storehouses shelter the greatest single collection of ordnance supplies in the country.

In connection with the manufacture of field artillery, tests by proof firing are necessary. So the Ordnance Department has established proving grounds. That at Aberdeen, Md., is the largest. Facilities for emergency use of the same sort exist at the Savanna grounds, an adjunct of Rock Island Arsenal, and at Erie, Ohio.

Practically all ordnance manufacturing, except, of course, in emergencies, is done at the Springfield Armory and the four main Arsenals—at Rock Island, Frankford, Watertown and Watervliet—other Arsenals doing repair work only, in addition to storing and issuing supplies.

SPRINGFIELD ARMORY

Principal work done at the Springfield Armory is in connection with the manufacture of the U. S. army rifle, model of 1903, and its spare parts and appendages, bayonets, bolos and trench knives.

The Armory was established at Springfield, Massachusetts, in April, 1778, as a laboratory for the preparation of ammunition to be used in the Revolutionary War. In 1794 it was made a National Armory for the manufacture of small arms, and has continued in this capacity since. In the World War the output attained a rate of 6,000 rifles a week. The value of the Armory, which occupies 297 acres of ground, is estimated at $12,229,000.

Before the Armory at Rock Island was opened, in 1905, all rifle manufacturing was done at Springfield, and in 1915 reduction of appropriations by Congress made it necessary to again center production at the latter place. During the World War Springfield and Rock Island together could not

supply enough arms. Since that conflict the Rock Island Armory has done only repair work, Springfield being able to meet peace time needs of the army. With a great supply of rifles on hand, it is unlikely that the present type of weapon will again be manufactured at Rock Island.

Regulation uniform adopted for women workers at Arsenal during the war.

WATERTOWN ARSENAL

Watertown Arsenal is located at Watertown, Mass. Its activities include manufacture of gun forgings, seacoast gun carriages, railway mounts

and high explosive and armor-piercing projectiles. It stores and issues parts for seacoast artillery carriages and target material.

This Arsenal was established under act of Congress dated February 8, 1815. It embraces 87.4 acres, valuation of land, buildings and equipment being $20,631,000. The civilian personnel numbered over 3,000 during the late war.

WATERVLIET ARSENAL

Watervliet Arsenal is located within the city limits of Watervliet, N. Y. Its main function is the manufacture of both light and heavy guns, and accessories. The site was acquired in 1813, and comprises 144 acres. The value of its lands, buildings and equipment is $12,029,000.

During the World War employees numbered 3,300 and production in 1918 was 578 completed guns, ranging from 1.457-inch to 16-inch. There were relined or modified 161 guns, ranging from 6 to 16-inch types.

FRANKFORD ARSENAL

Frankford Arsenal is located 10 miles from the center of Philadelphia, Pennsylvania. It manufactures small arms ammunition of all kinds, metal components of artillery, trench warfare ammunition, and fire control and range-finding instruments, including optical parts. This Arsenal was acquired May 27, 1816. It covers 91.5 acres, and the value of its land, buildings and equipment is estimated at $24,084,000. Over 5,000 workers were employed during the World War.

PICATINNY ARSENAL

Picatinny Arsenal is in Morris county, New Jersey, within 5 miles of Dover. Its work is the manufacture of powder, high explosives and metal components for the loading of the same. Experimental work is also done in development of ammunition.

Picatinny Arsenal was established in 1880. It comprises 1,615 acres, the valuation of land, buildings and equipment being $8,965,000. Number of employees during the late war reached 1,500 and the production of powder in 1918 was 2,369,200 pounds.

SAN ANTONIO ARSENAL

Located within the city limits of San Antonio, Texas, San Antonio Arsenal is a pre-war ordnance establishment, equipped for storing, maintaining and issuing all classes of ordnance goods, and with facilities for repairing stores used by troops in that section of the country. The site comprises 19.65 acres. It was acquired in 1859. There are 235,640 feet of storage space, and value of the establishment is placed at $998,000.

AUGUSTA ARSENAL

Augusta, Georgia, is the home of Augusta Arsenal. Here are stored and issued ordnance material other than ammunition for the 4th Army Corps.

Minor repairs are also made, shop equipment being sufficient to care for all kinds of ordnance, including small arms, field and coast artillery, etc. The Arsenal embraces what formerly was known as the Augusta Ordnance Supply Depot, located several miles from the Arsenal, and now the main storage plant. There are 100 acres of land, of which the government owns 70, the other 30 being leased. This Arsenal was established in 1826.

BENICIA ARSENAL

Benicia Arsenal is located one mile from Benicia, California. It stores and issues ammunition and other supplies for the 9th Army Corps area, and collects and forwards ordnance supplies for the army in the insular possessions and Alaska. It manufactures cast iron projectiles, all classes of target material and smokeless powder for seacoast armament, and repairs ordnance material. Though title to this Arsenal was not finally acquired until October 10, 1862, a portion of its present site was used for ordnance purposes as early as 1851. It covers 339 acres, the valuation of land being $140,000 and of buildings and equipment $1,489,000.

RARITAN ORDNANCE RESERVE DEPOT

The Raritan Ordnance Reserve Depot is located on the Raritan river, about thirty miles west of New York City, and five miles northeast of New Brunswick, N. J. At this establishment are stored, issued and maintained ordnance supplies for troops of the 1st, 2nd, and 3rd Corps areas. There is also stored a reserve supply of ammunition and components. Dock facilities accommodate lighters for loading ocean-going vessels. The Depot was acquired in October, 1917. It comprises 2,159 acres. The land is valued at $680,000 and buildings and equipment at $14,073,000. Raritan has taken over activities of the former New York Arsenal.

ERIE PROVING GROUND

Location of the Erie Proving Ground is seven miles west of Port Clinton, Ohio, on Lake Erie. It has storage space and maintains facilities for tractors, automotive vehicles and heavy artillery, and in addition, in case of emergency, proof firing may be done there. It was acquired March 25, 1918. Of the 1,218 acres included, 1,165 are owned by the government and 53 by the State of Ohio. Valuation of land is $231,000, and of buildings and equipment $5,527,000.

ABERDEEN PROVING GROUND

The Aberdeen Proving Ground is located 35 miles northeast of Baltimore, Maryland. It was acquired December 14, 1917. There are 70,000 acres, half of which is under water. Valuation of land is $3,553,000, and of buildings and equipment $13,728,000. In addition to facilities for proof firing of guns and carriages, this establishment has a field service storage area with space under roof of 480,000 square feet.

Resources of Tri-Cities

AVAILABILITY of workers in numbers, qualifications and training suited to its needs was vital to the successful operation of Rock Island Arsenal in the World War, just as it must be in any future military crisis in which the country may become involved. At no time during the conflict was there any serious difficulty in recruiting shop and office workers and building tradesmen as rapidly as they could be utilized. Most of them came from the surrounding cities, Rock Island, Moline and East Moline, Illinois, and Davenport and Bettendorf, Iowa. All were housed without much inconvenience, though the government undertook a project to provide homes in all five cities. This was begun in 1918, in anticipation of a prolonged struggle; in all 565 houses being finished, none, however, being completed at the time the armistice was signed.

The five cities named, together with their suburbs, generally known as the Tri-City community, have a combined population of over 150,000, according to the 1920 census. Of this number, according to a recent private survey, 73,000 are aged between 15 and 45, and 46,000 males and 13,000 females work for wages. Industrial workers number 14,000 and trades employes 8,000. Diversity of employment offered in the community affords opportunity for a wide variety of training, and the people are well above the average, taking the country over, in education and wealth. The percentage of families with an income of $3,000 or more is 7.06, against an average of 1.94 per cent for the entire United States. The percentage with incomes between $1,800 and $3,000 is 23.60, while that for the entire country is but 11.06 per cent.

The Tri-City community is the center of a large area of rich, fertile, and thickly populated country. From Chicago the distance by rail is 181 miles, and from the Missouri river, on the west, it is 316 miles. North by river to St. Paul it is 397 miles, and south by river to St. Louis 332 miles. This is the largest population center between the points named. Consequently an immense business in distributing commodities is carried on.

Diversity of manufacture and magnitude of trading area make for stability and minimize danger of temporary depressions to which communities depending upon a limited number of lines of commerce and production are subject.

There are a number of concerns in the Tri-Cities which do business all over the world, and valuable advertising for the community is gained there-

by. This is the center of the manufacture of agricultural implements—Deere & Company, the Moline Plow Company, and Rock Island Plow Company being leaders in their field, with a combined capital of more than $100,000,000. Users of plows everywhere associate with them the name Moline. Rock Island's renown is carried abroad by the trans-continental railroad which bears its name, as well as by the greatest Arsenal in this country, and in many respects the most complete and spacious military manufacturing and storage establishment on the globe. A number of large industrial concerns perform a similar service for Davenport, East Moline, and Bettendorf.

The handicap of being located a thousand miles from tidewater has not prevented more than a dozen Tri-City manufacturing establishments from doing an extensive foreign business. Among them, in addition to the farm implement concerns already named, may be mentioned the Western

City of Rock Island, seen from Arsenal clock tower.

Pump Company, Davenport Locomotive Works, Gordon-Van Tine Company, Red Jacket Manufacturing Company, Victor Animatograph Company, Linograph Company, Purity Oats Company, and Western Flour Mills, of Davenport; Rock Island Manufacturing Company, Phelps Manufacturing Company, Franks Manufacturing Company, and Standard Textile Products Company, of Rock Island; Williams, White & Company and National Licorice Company, of Moline; and the Troy Laundry Machinery Company, the E. & T. Fairbanks Company, of East Moline; and the Bettendorf Company, of Bettendorf.

The famous Velie Motor Cars, manufactured by the Velie Motors Corporation; the "R & V," manufactured by the R. & V. Motor Company, and the "Stephens," manufactured by the Moline Plow Company, are known internationally as high-class automobiles, backed by reliable, progressive and time-tried concerns.

The largest washing machine factories in the world are located in Davenport, Iowa—the Voss Bros. Manufacturing Company, the White Lily Manufacturing Company, and the Brammer Manufacturing Company. This industry had its birth in Davenport.

The Gordon Van-Tine Company is the largest distributor of ready-cut houses in the world. The Victor Animatograph Company, making moving picture projectors and slides, is also the largest of its kind anywhere. About one-third of the machinists' vises used in the world are supplied by the Rock Island Manufacturing Company, which furnished 150,000 vises for use by the allied armies in the World War. Williams, White & Co. lead in production of machine shop and foundry tools. The Bettendorf Company has the largest shops in the locality devoted to a specified line of production, being one of the largest manufacturers of steel freight cars in the world. Scores of local concerns send their products to all parts of the United States.

Few communities are better served in the matter of transportation. Three trans-continental railroad lines reach the Tri-Cities, and two others, having connecting links, cross the Mississippi within 50 miles. Of minor branches and interurbans there are several, while the end of 1922 is expected to witness the completion of at least one hard road giving access to the permanent highways of the east. Last year a million dollars was spent building hard roads radiating from the city of Davenport, while extensive work of the same sort, to be undertaken in the immediate future, is planned on both sides of the river. The Tri-City Railway Company lines ramify into all parts of the urban community, which is also bound together by hundreds of miles of paved streets. Two bridges cross the main river, rail, vehicle and foot traffic being carried free of tolls by the Rock Island bridge, government owned and controlled.

In connection with transportation advantages, the facilities afforded by the Mississippi river must not be overlooked. Though water-borne traffic on the inland streams has greatly declined from that of a few decades ago, competent authorities agree that the railroads have about reached their physical limits, and that the day of the return of the water carriers is not far distant. Everything points to an early demand for use of boats to handle the bulkier and heavier commodities that rail lines are expected to relinquish as the business of the country outgrows their facilities for expansion. Foreseeing such a situation, the city of Davenport has expended a million dollars in levee improvement to facilitate the handling of freight to and from river craft. In addition to connection with all points on the Mississippi and its navigable tributaries, this locality, by means of the canal about to be built by the State of Illinois and the existing Illinois and Mississippi canal, will be able to ship by water east through the Great Lakes to all ports thereon, and, eventually, no doubt, to the seaboard.

Water power, available in a limited quantity with present facilities, and potential, in an amount sufficient to supply all future industrial needs, is another important asset of the Tri-City district. As was pointed out by Mr. E. S. Putnam, of Davenport, during the World War, when the govern-

ment was seeking a site for a nitrogen fixation plant, the Rock Island rapids make possible a hydro-electric plant developing as much as 100,000 horsepower. Within 60 miles distant, at the east, as was shown by the same authority, there are extensive coal deposits, where steam power can be most economically generated in any amount desired to supplement the water power. Transmission from the mines by high voltage wires would be a simple problem.

It may be taken for granted that the Tri-City community is well supplied with schools, churches, welfare organizations and other means of promoting spiritual advancement and culture. Among the schools are several sectarian institutions, including Augustana College and Theological Seminary, St.

Looking south from Island end of Moline bridge.

Ambrose College, St. Katharine's School, and the Villa de Chantal, all of which draw pupils from a wide area. The Palmer School of Chiropractic, with its 3,000 students, representing practically every civilized country on the globe, should not be overlooked.

It is hardly necessary to state that the cities located on the river shores adjacent to Rock Island Arsenal are progressive, that they are modern, well kept and sanitary, with many parks and scenic features, the beauty of which is being constantly enhanced by judicious expenditure of money and effort. Recreation has not been slighted. There are fine theatres, and art, music, and sports, both amateur and professional, are well supported. The Rock Island Arsenal Golf Club maintains an eighteen-hole course on the Island itself that is accounted one of the finest in the country and has been the scene of several celebrated tournaments. The club-house, costing $50,000, was built and the links were laid out and are maintained by civilian members, but the Arsenal Commandant is ex-officio president of the organization and in full charge of the premises. The course utilizes some of the lower ground and that adjacent to the officers' quarters, and the Arsenal is in nowise jeopardized, nor is the military reservation encroached upon. Facili-

ties are afforded for outdoor exercise which regulations require army officers to take.

Growth of the cities surrounding the Arsenal has been rapid ever since they passed from the village state, more than half a century ago. Permanent improvements annually made range, normally, between five and ten millions, tending always upward. Population of the five municipalities increased from 96,117 in 1910 to 146,880 in 1920, a rate of growth far above the average the country over, being more than fifty per cent.

Total bank deposits in the Tri-City community were $82,000,000 at the close of 1921, reflecting the financial depression by only a slight decline from the figures of the preceding year. Davenport enjoys the reputation of having the greatest banking resources of any city of its size in the country.

The community is a great jobbing center, its territory comprising nearly all of Iowa and a large part of western Illinois; retail stores rank with the best anywhere, and there are many of them, always in keen competition. Davenport has a million dollar office building and the largest hotel in the State of Iowa. A hotel nearly as large is in course of erection in Moline There have been few serious labor controversies to interrupt the good order and progress of the community.

Though there are five cities with separate municipal governmental units and trading centers, the fact remains that the citizens of each one enjoys the advantages that all have to offer. Boundaries join on both sides of the river, and the people are closely drawn together by mutual interests. There is, in fact, a maximum of intercourse and a minimum of rivalry and friction, offering all the advantages of a single large city of 150,000 and eliminating some of the disadvantages. Big things can be and are successfully undertaken, commercially, industrially, educationally and in the way or recreation --things that no single city of the five could hope alone to support. To take a single instance, consider the Mississippi Valley Fair and Exposition, which, though ostensibly a Davenport enterprise, has made a phenomenal success of the two annual fairs thus far given, having the distinction of being the first organization of its class to win recognition in its initial year by the International Association of Fairs and Expositions.

Though the subject might be treated at greater length, it is believed that enough has been told to show that Rock Island Arsenal's surroundings are such as to insure an ample supply of trained labor and of necessary materials to provide for its maintenance in a high state of efficiency at all times and under all conceivable circumstances.

View up the river from head of Island, with Bettendorf car shops in the distance.

Henry W. Horst Company

The present Henry W. Horst Company is the outgrowth of a concept formed in the mind of a twelve-year-old boy, when its president, Mr. Henry W. Horst, was a lad in the old country. Not that he saw Rock Island, nor that he saw concrete road building or many of the other projects which today form integral parts of the large construction work his company now carries on, but that there was ever before him from these early days, America —the country of first promise—the building industry, for which he had a natural talent, and the determination to excel in building work, and in a company of his own. Filled with these visions, and backed by a strong re-

HENRY W. HORST

A. E. HORST

ligious faith and an unshaken belief in himself, the then embryo constructor never permitted discouragements, struggles or setbacks to dim the ardor or divert the energies with which he, as a youth, a young man and a mature man, continuously pressed forward toward his goal.

Apprenticed under old-country guild rules at the age of 14, this future American man-of-affairs served faithfully for three years, devoting a part of the time, as per guild requirements, to the study of bookkeeping and drafting, and using spare hours to add to his already considerable knowledge of foreign language.

He emigrated to the United States at seventeen years of age, finding his way to Rock Island, Illinois, destined at a later date to become the center of his far-reaching labors. Keeping the fixed purpose of service through a com-

pany of his own ever before him, the youth followed carpentry, continuing in this line through early manhood, gradually working toward his end through sub-contracting, chiefly in the Middle West.

Mr. Horst feels today that outside of his faith in an all-wise God, no one thing contributed more largely to his ability to cope with difficulties than seven years of pioneering on the Kansas prairies, homesteading, helping to build towns then in their infancy, and at the same time laying the foundations of his own fine family. In Oakley, Logan County, Kansas, Mr. Horst first entered the contracting business. Buildings there, completed in 1886, still stand to the credit of this step in the development of his purpose.

Returning to Rock Island in 1892, Mr. Horst soon joined forces with another contractor, but only to sever relations after one year's united efforts, during which time a splendid church edifice was erected.

In March, 1893, he entered into a co-partnership with Mr. Emil Peterson. This partnership lasted eight years, which time was largely occupied with the building of residences. Already the time element, so dominant in all Henry W. Horst Company construction, was making itself felt, many fair-sized residences having been erected during this period in thirty days each. Usually the houses built during this period were designed by Mr. Horst himself, who worked long and incessantly during these years of struggle.

1900 marked the establishment of the individual business of Henry W. Horst. For a number of years Mr. Horst not only constructed buildings, but kept his own accounts, acquiring his first bookkeeper in 1903. By this time, however, his work was so well organized that he found it possible for the first time to visit his aged mother and to tour Europe, taking with him his oldest son and later business partner. Offices had already been removed from the residence of Mr. Horst to a small building on the same lot. Later they were moved into a fine down-town location. Before this latter move, the Company's first prospectus, an attractive booklet of 28 pages of illustrations, was published in 1907. In 1911, in order to accommodate the growing business, Mr. Horst purchased the lot on which the present spacious Horst building stands. The building was erected in 1912.

By this time the second member and present manager of the company, A. E. Horst, had graduated from the University of Illinois, and had become superintendent of construction. After three years of this joint work, the present company was organized and incorporated. A second and larger booklet was published, and a new and larger period of development was entered upon.

During this period Mr. Horst, who had at one time built sod houses and had gone through such experiences as that of having brought into Rock Island its first concrete mixer and having constructed Rock Island's first reinforced concrete office building, saw his company develop to the point of covering such work as residences, business blocks, industrial buildings,

railroads, highways, housing projects, large government contracts, etc. Among the accomplishments of the company the following may be cited:

I. Government Work.

1. A number of important buildings on the Rock Island Arsenal, among which are the Standard Forging building and the Heppenstall building, now known officially as Shop "O" and Shop "Q", respectively.

2. Officers' Quarters and Barracks buildings. Eleven buildings, mostly large brick and concrete structures, for housing and caring for the military units located on the Government reservation at Proving Ground, Illinois. This project was completed 30 days ahead of scheduled time, much to the satisfaction of Government inspectors and contractors alike.

3. Railroad. Sixteen miles of standard gauge railroad with a dozen spurs, built on government property at Proving Ground, Savanna, Illinois.

4. Nitrate Storage Pit. One of the most unique of the Henry W. Horst Company's varied bits of construction, this mammoth pit, the size of three city blocks, (1600'x200') and with sloping 17-foot sides, all of reinforced concrete, having seven cross-walls, was designed for the storage of 10,000 carloads of nitrate for the manufacture of explosives. Situated in a veritable sand desert, this huge project required for construction some 150 cars of sand, 250 cars of stone and gravel, 50 cars of cement and 100 cars of miscellaneous materials. 70,000 cubic yards of dirt had to be moved. Undertaken in the late fall of 1920, just about the time of the keenest railroad transportation difficulties, this pit, with the 16 miles of railroad mentioned in the last paragraph, were completed before Christmas—three days ahead of scheduled time—the schedule having been prepared before the transportation difficulties had presented themselves.

5. Housing Projects. Here again the Henry W. Horst Company record-breaking time achievements came to the fore. This wartime Government contract was to furnish 460 homes for Government workers in the United States Arsenal at Rock Island. Time was, of course, an important element. The houses were in six groups in three localities, one in Moline, two in East Moline and three in Rock Island. Although the contract was signed in the fall, the seventh of October, this project, said to be the second largest of some thirty-eight such Government Housing Projects in the country, was the first one finished. 460 permanent and very well appointed homes were completed, including decorating, in 117 days—an unparalleled record.

U. S. STORAGE PIT AT SAVANNA, ILL.—REINFORCED CONCRETE PIT, T

6. Hangars at Chanute Field, including boiler house and heating system for 11 hangars at Chanute Field, Rantoul, Illinois.

II. Concrete Highways.

With 13 miles of concrete road in the home state of Illinois built in slightly more than one year as a beginning, the company soon branched out to build such roads in neighboring states, as Iowa and Wisconsin, until now its reputation for "smooth-riding" roads has spread through the east, the company at this time having under construction three fine concrete roads in Pennsylvania. A nearby state has recently given the company the record of having built the best-riding road in its limits.

SECTION OF U. S. GOVERNMENT HOUSING PROJECT IN TRI-C

REE CITY BLOCKS, FOR THE STORING OF 10,000 CARLOADS OF NITRATE.

III. Industrial Buildings.

Here the list grows so large that there can at best be but a touching of the work accomplished. Outstanding are such projects as the Deere Harvester Plant in East Moline, where five large buildings were under construction at one time; the Root & Vandervoort-Wagner Ordnance plant, a huge two-story brick building with monitor bay and crane way, all turned over complete in 70 days; the Deere Foundry and Service building, Moline Power Plant, Crescent Macaroni and Cracker factory, Davenport, Iowa, etc.

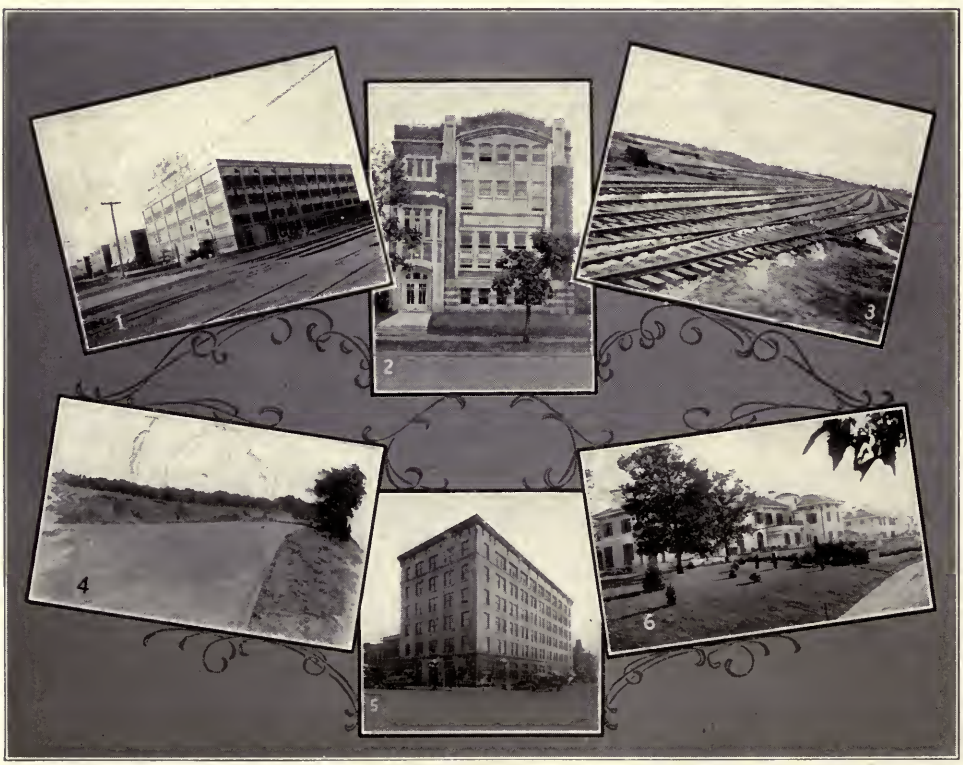
IV. Miscellaneous. (Business Blocks, Schools, Clubs, Residences, etc.) As samples of business blocks in the Tri-Cities, such buildings may

OMES COMPLETE, INCLUDING DECORATING, ALL IN 117 DAYS.

be cited as the Robinson building, Rock Island, for the completion of which, under unusually trying circumstances, a handsome reward was given the president of the Henry W. Horst Company by the owner of the building; the Reliance building in Moline, where a bonus for speedy completion was awarded the Company; the Safety building, Rock Island, the Watch Tower Inn (completed in fifty days). Typical schools are the Washington school and the Immanuel Lutheran school and hall, both in Rock Island. Among residences are the Huber residence, Rock Island, and the Soverhill residence in Moline, both perfect in every appointment; and in the line of clubs, the Rock Island Club is outstanding.

For further record of construction the reader is referred to the Henry W. Horst Company's booklets of recent years.

As evidence of continued wide-awake management, under the younger Mr. Horst, the Company, just as this history goes to press, has succeeded in getting through the LeClaire Canal, before its completion, barges conveying material to a point on the Iowa side of the Mississippi, where they are opening a new highway project. The Company thus becomes pioneer users of the Canal.



TYPICAL OF VARIED LINES OF WORK.

1. Industrial—Deere Harvester Buildings. 2. Schools—Immanuel Lutheran. 3. Railroads. 4. Concrete Highways. 5. Business Block—Safety Building. 6. Residences—Huber Home.

"Seventy Years of Service"

INTRODUCTORY: — The following sketch of the Rock Island railroad, as it relates to the Arsenal on Rock Island, has been compiled from the story of the Rock Island Lines, entitled, "Seventy Years of Service---from Grant to Gorman," written by F. J. Nevins, and published by that railway, incident to the celebration of its Seventieth Anniversary on October 10, 1922. Copies of "Seventy Years of Service" may be obtained by writing Passenger Traffic Department, Rock Island Lines, LaSalle Station, Chicago, Illinois.

MOVING westward through America, the "Star of Empire" has closely followed the lines of the great railroad systems. The steamboat and the ox train sufficed for the needs of the early settlers, but fell far short of affording transportation facilities required for the upbuilding of the inland industry of the Great Middle West.

The steam locomotive came in time to prevent the United States from falling apart into two or more separate political units. The steel rail linked our far flung settlements together and still holds them in a union that depends absolutely upon efficient and economical transportation.

James E. Gorman, President

The Chicago & Rock Island Railroad, now known as the Chicago, Rock Island and Pacific Railway, was the first railroad to connect the Mississippi river with the Great Lakes and with the rail systems then being developed in the east. It was the first to bridge the "Father of Waters" at any point, and the first to reach out into the western country beyond, then the land of the Indian and the buffalo.

Seventy years ago the Mississippi constituted a formidable barrier to the growth of the great land lying west of the Trans-Mississippi states. Little do we realize now how great an obstacle the river was to the westward movement of human beings and goods necessary to the development of the territory lying beyond the shores of this mighty stream. As yet, it was unspanned by bridges and the art of the railroad bridge builder was in its infancy, comparatively speaking.

Slow and uncertain ferries, often propelled by horse power, afforded the only means of crossing. Westward traffic sought out the places where topographical conditions offered the easiest approach on both sides, and at those points settlements sprang up. When the railroads came, the favored points of intersection of land and water transportation lines took on new impetus and rapidly became cities.

This is what happened when the first railroad pushed through to the Mississippi in 1854. The "Chicago & Rock Island" found three healthy villages—Rock Island and Moline, Ill., and Davenport, Iowa—at its crossing point with the Mississippi. It made them cities in a surprisingly short period. Had the builders of the road selected a different route, the twenty-odd square miles now lying in their corporate limits would still be used mostly for agricultural purposes. Without the Rock Island railroad there is small likelihood that Rock Island Arsenal ever would have been established.

Therefore, the story of the building of the "Chicago & Rock Island" railroad, with its pioneer feat of bridging the Mississippi, forms an integral part of the history of the World's Greatest Arsenal. It is a significant fact that preparation of this book was undertaken while the Rock Island Lines were planning observance of their 70th anniversary, falling on October 10, 1922.

It has been generally assumed that the name of this great railroad system was taken from the city of Rock Island, but this is not the case. It was the Island, the site of old Fort Armstrong, which suggested the appellation for the road, just as it did later for the city of Rock Island. As a matter of fact, when the rail line was first conceived in the minds of a few enterprising citizens of northern Illinois and western Iowa, the town of Rock Island was still known as Stephenson, the name selected by its founders.

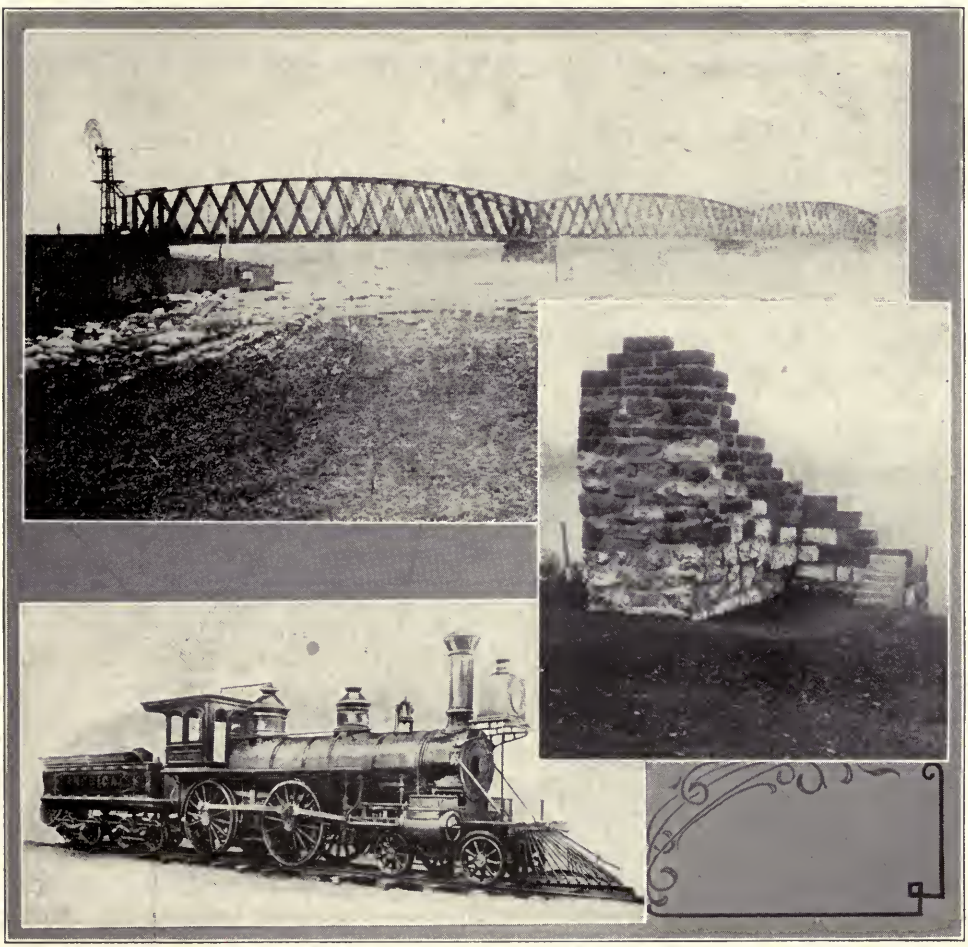
Soon after the Indian menace to white settlers had been removed in the Black Hawk war, a dozen men whose homes were in the district between Chicago and Davenport interested themselves in the project to build a railroad connecting the Mississippi at Rock Island with the Illinois river at LaSalle—the western end of the Illinois and Michigan canal, the water route west from Chicago. In 1845 application was made to the Illinois legislature for a charter for the "Rock Island & LaSalle Railroad Company." February 27, 1847, a company was formed under that name and with $300,000 capital. Judge James Grant, of Davenport, was the first president.

There was plenty of local enthusiasm, but sales of stock dragged. A railroad-building scheme financed by the state of Illinois had just failed miserably, after $10,000,000 of the tax payers' money had been sunk. So the Rock Island & LaSalle did not at first find much favor among those with money to invest. Discovery of gold in California in 1848 eventually furnished the impetus which set the project in actual motion.

In 1850 congress was asked for a right of way through public lands and the Illinois legislature was petitioned for extension of charter rights necessary to make Chicago, instead of LaSalle, the eastern terminus. The name became the "Chicago & Rock Island Railroad Company." Since the line between Peru and Chicago would compete directly with the state-

owned canal, a stipulation was forced by the legislature upon the railroad company requiring it to pay to the canal trustees sums equal to canal freight charges on all commodities except live stock carried by rail between the points named.

October 1, 1851, construction was started by Farnum & Sheffield, of New Haven, Conn., and the first passenger train was run from Chicago to Joliet on October 10, 1852. Late that year, at a banquet in Davenport, a project



Above view shows first bridge across Mississippi River. View to right is Island abutment of bridge, preserved as memorial. View to left is of the famous Rock Island "Silver Engine" of the early seventies.

to build a line through Iowa to the Missouri river and to bridge the Mississippi at Rock Island was informally launched.

The Mississippi & Missouri Railroad Company was formed under the laws of Iowa, February 22, 1852. In May following, the first rail was laid

on the Iowa side. January 17, 1853, the Illinois legislature granted a charter to the "Railroad Bridge Company," formed by those interested in the rail lines it was planned to connect. July 16 of the same year John Warner, the contractor, began work on the first pier on the Iowa shore of what was to become the first bridge across the Mississippi.

River transportation interests naturally viewed prospective rail competition with apprehension. Therefore, they united for the purpose of obstruction. At first the idea of bridging the river was merely ridiculed as foolhardy. Later more forcible means of opposition were adopted. Rivermen were then, perhaps, the most powerful group in the Mississippi Valley, with ample funds and means of reaching those in high governmental positions.

Right of way across the Island was claimed by the railroad company under the terms of its state charter and also under act of congress, giving use of necessary space through public lands to all railroad and turnpike companies. The Iowa legislature had formally sanctioned the undertaking so far as it had authority to do so. However, Jefferson Davis, then secretary of war, claimed that the Island, having been set aside for use of his department, was not public land and the state had no rights therein. He forbade the railroad company to lay tracks or build a bridge there. Next came application for an injunction in the federal court for the northern district of Illinois, made at the request of the secretary of war. Hearing was before Judge John McLean in July, 1855, title of the case being "The United States vs. the Railroad Bridge Company, et al." The federal district attorney contested both the right-of-way on land and the building of the bridge, which was held an obstruction to navigation, but the court held with the defendant, and denied the motion for injunction.

In the meantime, work on the railroad and bridge had gone on without interruption, and on April 21, 1856, nearly two years after the road through Illinois had been completed, the first locomotive steamed across the "first bridge" to the Iowa shore. Next day a train of three locomotives and eight passenger cars crossed. The aggregate weight of this train was 67 tons. Trains weighing 2,200 tons now daily, almost hourly, cross the bridge at Rock Island.

Two weeks after the bridge was opened, the steamer Effie Afton became unmanageable just above the draw span, drifted against the pier and took fire. Boat and span were destroyed. This brought the wrath of the rivermen to a climax. Suit for damage followed. Judge McLean again presided, the case being "Hurd, et al vs. the Railroad Bridge Company." Abraham Lincoln, after visiting Rock Island to familiarize himself with the situation, and especially with the river currents at the bridge, appeared for the defense. It was one of the last cases in which he took part before turning his attention to the political movement which later carried him into the presidency of the United States, and served to call national attention to Mr. Lincoln.

A vast mass of evidence was presented to prove the bridge an obstruction to navigation. Lincoln handled the issue with his usual skill and secured disagreement of the jury, thereby exceeding the expectations of his clients. Public sentiment admittedly was averse to the defense.

About this time congress took a hand in the controversy, ordering an investigation to determine if the bridge were, in fact, a serious obstruction to navigation. The committee on commerce conducted the inquiry and decided in the affirmative, but added that in its opinion the courts were fully qualified to deal with the situation. Congress concurred in the finding.

Encouraged by the report of the committee, the river interests made one more fight. James Ward, a St. Louis steamboat owner, started an action in the United States Court for the southern district of Iowa to have the bridge declared a nuisance and secure an order for its removal. This the court, in due time, did, Judge John M. Love finding the structure "a common and public nuisance," and ordering destruction of the three northern piers with their superstructure, which lay within the jurisdiction of Iowa. This order was not carried out, because the United States Supreme Court, in December, 1862, reversed the finding of the District Court. That ended the litigation, which had been watched with interest all over the country, involving, as it did, questions which presented themselves wherever railroads were compelled to cross important navigable streams.

Leon M. Allen, Vice-Pres. and Gen'l Traffic Mgr.

Much that is of interest necessarily has been omitted from this brief outline of events attending the pioneer work of building the Rock Island Lines. With the later history of the system the present generation is more or less familiar. How the road first planned merely to connect two inland waterways, scarcely 100 miles apart, has grown into a great system of 8,122 miles, extending its service to the Pacific coast and forming the leading artery of commerce through the most productive areas of the Middle West; how it always has kept abreast of or a little in advance of the times, mechanically, and in meeting the needs of its territory; how it has built up the Tri-City community about Rock Island and made the development of the Arsenal there possible, need be no more than referred to here. Its tracks form a network, many miles long in the aggregate, in the

General Offices and Chicago Terminal Rock Island Lines

district about the Island, and its great locomotive repair shops at Silvis, nearby, are among the largest in the land.

Having exclusive access to the Island, the Rock Island railroad is, and always has been, the right arm of the Arsenal. This was again made plain during the World War, when thousands of carloads of material and finished products were handled in a manner that was entirely satisfactory. After the armistice was signed, thousands of carloads of war material were returned there for storage.

Always the Rock Island Lines have been closely identified with the community surrounding the Island which gave the system its name. This desirable condition has been furthered by the personal contact of a number of high executive officers of the company with the Tri-Cities. Judge James Grant, a Davenport man, was president of the original company. R. R. Cable, later identified with the road as president and chairman of the board of directors, made his home in the city of Rock Island for many years. Leon M. Allen, now vice-president and passenger traffic manager, began his career in Davenport, and naturally feels a strong personal interest in the locality.

The Rock Island road was founded by men of broad vision and keen foresight. Those who have managed it have been able and enterprising. Service has been their watchword. They have realized that in the upbuilding of its territory lay the railroad's opportunity for growth.

The historian's part is not only to record events, but to indicate causes. The story of the Rock Island Lines is an interesting story. It involves the typical play of forces which have made the United States the greatest nation on earth. It tells how the "Star of Empire" came to the Mississippi river, and beyond.

The Tri-Cities and The Burlington Railroad

In the development of the business community embracing the cities of Davenport, Rock Island and Moline, together with East Moline and Bettendorf, and known as "The Tri-Cities," a distinctive factor of constantly increasing importance has been and is the Chicago, Burlington & Quincy Railroad, which serves this great region through four gateways—its two lines from Chicago, one via Mendota, Prophetstown and Denrock, formerly known as the Illinois Grand Trunk; the other via Aurora, Shabbona, Sterling and Barstow to East Moline, formerly known as the Chicago & Rock River Line; its line from East St. Louis, formerly the Rockford, Rock Island & St. Louis, and the Davenport, Rock Island & Northwestern, with its Crescent bridge, in which the Burlington owns a one-half interest.

A brief sketch showing how these four important Burlington lines entered into the transportation business in the Tri-City territory is of absorbing interest.

I

The C. B. & Q. Railroad (Burlington Route) was born in Aurora, Illinois, with four lines diverging east, west, north and south.

The Burlington is the shortest rail line between Chicago and Rock Island—the distance from Chicago via Mendota and Denrock to and into Rock Island being 169 miles. This route is over the Burlington's main line from Chicago to Mendota, thence to Denrock over the old Illinois Grand Trunk (incorporated in 1852 as the Joliet and Terre Haute, and re-organized in 1859, but not actually built to Denrock until 1871), and thence into Rock Island in 1879.

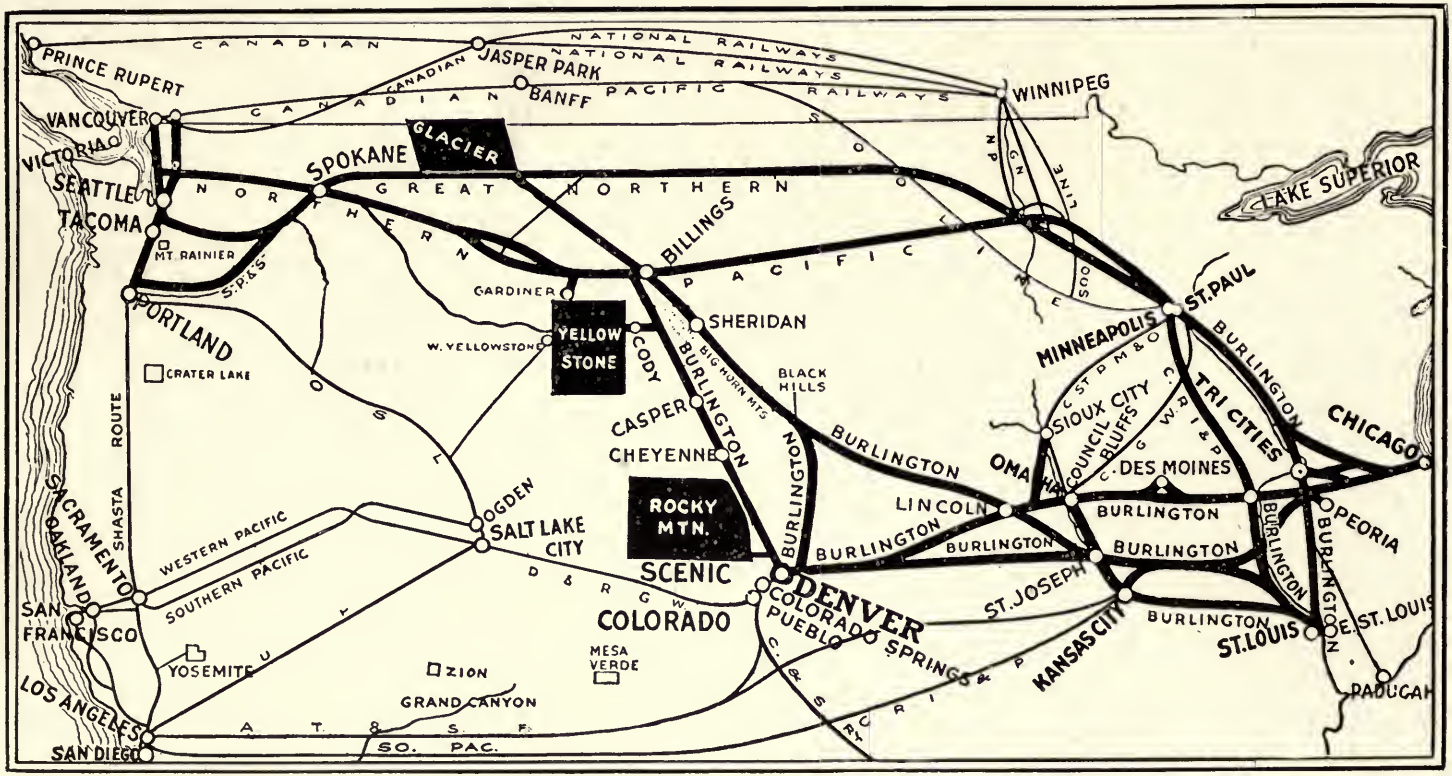
II

The Burlington's other line from Chicago comes in by way of Sterling and Barstow to East Moline, then into Davenport over the Crescent bridge. This line from Aurora to Shabbona is the old Chicago & Iowa; from Shabbona, as the old Chicago & Rock River, it heads for Rock Falls and Sterling, thence to Barstow and into East Moline, and then into Moline, utilizing a part of the old Rockford, Rock Island and St. Louis.

The Chicago & Rock River was organized in 1867, completed to Sterling in 1884, and provided an additional Burlington-all-the-way Tri-City-Chicago line. Thousands of cars of freight are annually handled over these two lines.

III

The story of the 300 miles of Burlington rails stretching south from the Tri-Cities to East St. Louis is filled with human interest. That splendid railroad is the product of the genius and courage of a distinguished citizen of



CHICAGO, BURLINGTON AND QUINCY RAILROAD

Iowa—Judge George Greene—who did more to develop Cedar Rapids and its industries than any other man.

The original company, called the Rock Island & Alton Railroad, which had authority to build "from Rock Island to Whitehall, in Green County, Illinois, and thence to Illinoistown" (now East St. Louis), was incorporated by a special act of the Illinois Legislature, February 14, 1855. This was a "paper" railroad. In 1859 its name was changed to St. Louis, Alton & Rock Island. That company secured a large part of the right of way, and in 1860 had built a railroad grade between Beardstown and Whitehall. Then came the Civil War, which stopped all railroad building.

After the war Judge Greene conceived the idea of building a north and south railroad from Rockford, via Rock Island, to St. Louis, and incorporated his company as the Rockford, Rock Island & St. Louis. This was a part of the great movement for railroad building after the war, which culminated in the panic of 1873. Judge Greene's Rock Island road went down with a crash. The mortgage was foreclosed, and in 1876 the line was sold at public auction to Heymann Osterberg, who represented the Holland bondholders. They re-organized the company under a new name—the St. Louis, Rock Island & Chicago—and sold the road to the Burlington, which, in 1879, built into Rock Island from Port Byron Junction (seven miles), thus bringing the Tri-City territory into their system.

From Concord, below Beardstown, north, this line is utilized by the Burlington as part of its important through coal route, over which thousands of cars of southern Illinois coal are carried annually to St. Paul, Minneapolis, and the great Northwest.

Judge Greene lost his money, but his railroad remains to serve the public for all time.

IV

It was a business stroke of the Burlington to promote the construction of the Davenport, Rock Island & Northwestern, including the Crescent bridge, organized in 1884 as a bridge company by citizens of Davenport, who secured an Act of Congress authorizing the construction of the bridge.

But the company had no money with which to build, and the project hung fire for ten years. In February, 1895, the name was changed to Davenport & Rock Island Bridge, Railway & Terminal Company, its articles amended to provide for a railroad also from the foot of Perry street across the bridge into Rock Island. In 1898 the name was changed to the present company. The bridge cost $1,500,000 and was opened for business on January 1, 1900.

The money to build the bridge and the lines of railroad connected with it was furnished through the credit of the Burlington and St. Paul companies

jointly, and those two companies operate not only the bridge but the railroad. Under the name "Davenport, Clinton & Eastern," these two companies built a line 34 miles long between Clinton and Davenport, which is also used jointly. Burlington passenger trains between Minneapolis, St. Paul and St. Louis use this route through Davenport, Rock Island and Moline.

About the same time, pursuant to other plans for developing a great terminal system to serve the Tri-Cities, the companies named organized railroads in Illinois to extend these lines to East Moline and other points in Rock Island County.

As a result of all these activities, the Burlington is in an enviable position to provide a highly important and genuinely useful transportation service to and from the hearts of Davenport, Rock Island and Moline—prepared to serve the public with the necessary facilities to enable it to receive food and other essentials, raw materials, forward finished products, and travel to and from all parts of the world. In this Tri-City territory the Burlington and its interests own in round number 208 acres of land occupied by industrial tracks and terminal facilities which reach all important industries, enabling the road to serve them cheaply with the very best quality of Illinois coal and at the same time with its own rails placing them in close touch with the markets of Chicago, St. Louis, St. Paul, Minneapolis, Peoria, Omaha, Denver, St. Joseph, Kansas City, and all points on its 9,389 miles of road reaching into eleven great states, as well as all points on all connecting lines.

The Tri-Cities have a great future, and the Burlington is prepared to promote the interests of the Tri-Cities by providing a businesslike and dependable transportation service.

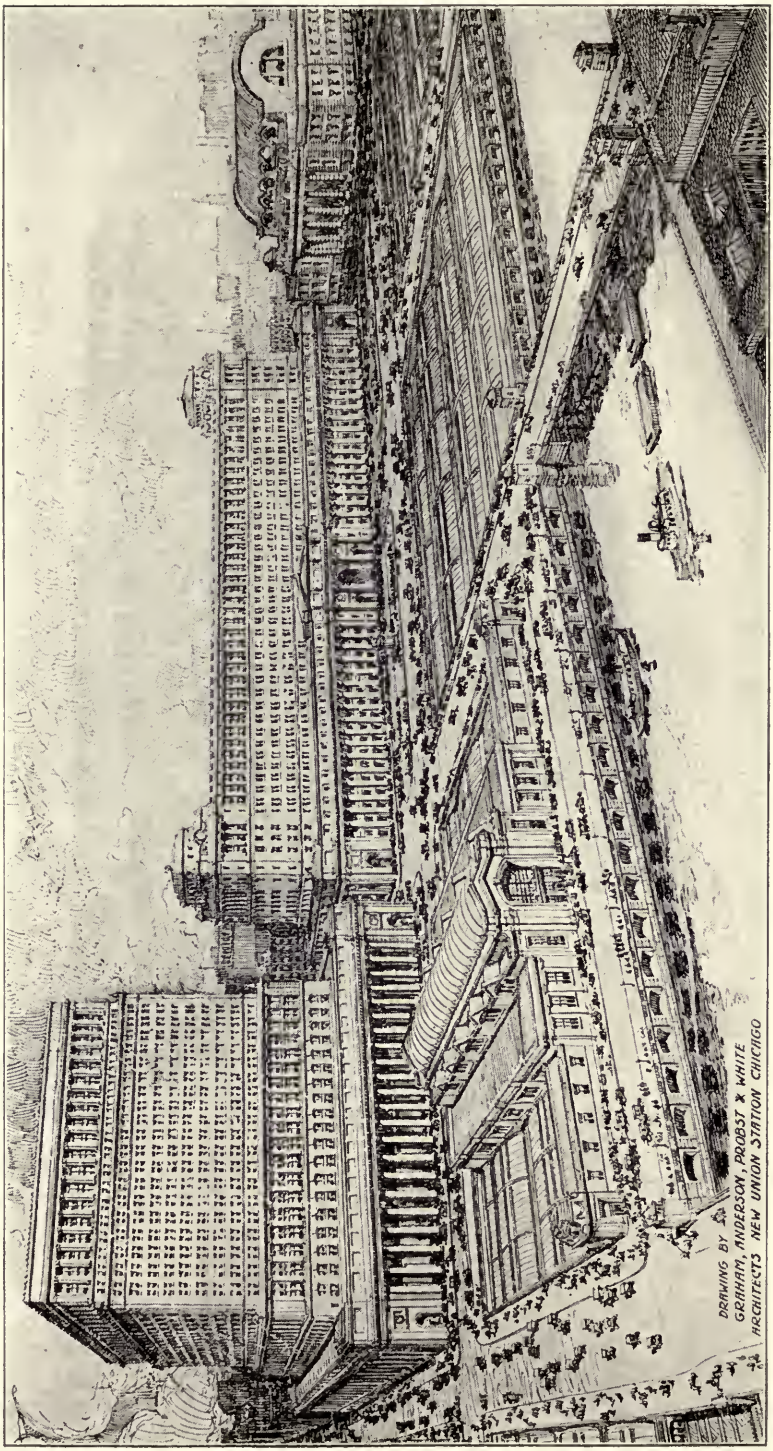
Tri-City passenger business of the Burlington is in charge of the following:

M. H. Teed, Passenger and Ticket agent, foot of Perry street. Phone 743, Davenport.

G. H. McEwen, Ticket Agent, 20th Street Station. Phone 764, Rock Island.

H. S. Fristoe, Ticket Agent. Phone 860, Moline, Moline Passenger Station.

H. W. Crawford, Division Freight Agent, is located in the 20th Street Station, Phone 679, Rock Island.



NEW UNION STATION

The Chicago Terminal of the C., B. & Q. R. R. and the C., M. & St. P. R. R.

The Chicago, Milwaukee & St. Paul Railroad

Men are deeply interested only in those things which touch and become a part of their lives. The more intimate and constant the association, the greater the interest.

Breathes there a man with soul so dead that the sight or sound or a moving railroad train does not thrill some fibre of his being, or awaken at least a faint yearning for change of scenery, for travel or adventure? Tied down to his daily routine behind desk or counter, the whistle of a passing locomotive suggests to the city man the free out-of-doors and restful rural scenes, while the same sound brings to the farmer or villager visions of the busy marts of trade and centers of industry, with their bustling crowds and hum of traffic. The man in the freezing north thinks of the balmy south, while the man in the torrid clime thinks of places where there is deep shade, or where cooling breezes blow. Few among us fail to sense in the sound a subtle invitation, and in some measure to respond to it.

So much for the romantic side. Getting down to brass tacks, the whistle of a locomotive means to nine-tenths of our inland population something rather more practical, if more prosiac. It means bread and butter, clothing, shelter, fuel. It means practically all the necessities of life, with the comforts and the luxuries thrown in. Without the railroad this productive and thriving Middle West would now be but little farther advanced than it was when our forefathers of the covered wagon found it. Small wonder, then, that the story of the building and operating of our great railroad systems is one of universal interest.

More than half a century has been required for the building of the Chicago, Milwaukee & St. Paul Railway as it is today—half a century filled with stirring events, with struggle and conquest over the forces of nature and rival transportation interests. From a small beginning, it has reached out mile by mile, first over the upper Mississippi valley, then over the Missouri valley, then across the plains and mountains, finally pushing its lines through to the Pacific coast. Wherever it has gone it has been a builder of wealth and population, bringing civilization to regions that but for its coming would have remained little more productive or inviting than the desert.

In 1863 the Milwaukee & St. Paul Railway Company was formed, and purchased at foreclosure sale 105 miles of railroad, extending from Portage, Wisconsin, to LaCrosse, on the Mississippi. Though it was the ambition of the promoters to unite the Wisconsin metropolis with the rapidly growing community at the head of navigation on the Mississippi, it was some time before their line reached either point. Access to Milwaukee was gained by purchase of a number of short lines, but the company operated wholly within the state of Wisconsin for a number of years.

The first stockholders' meeting was held in 1865. Alexander Mitchell was the first president and S. S. Merrill the first general manager. Both

held office many years, the property growing into a trunk line railway under their administration.

In 1867 two lines being built from McGregor, Iowa, to St. Paul, by way of Austin, Minn., were bought, and in November of that year a road was opened for business, being the first to connect Milwaukee with the Twin-Cities, St. Paul and Minneapolis. At first a ferry was used to transfer cars across the Mississippi between McGregor and Prairie du Chien. The company changed its name to the "Chicago, Milwaukee & St. Paul" in 1872, and the following year it completed its own line to Chicago.

At the close of the nineteenth century the Milwaukee system embraced more than 8,000 miles of track, its rails criss-crossing Wisconsin, Iowa, Minnesota and South Dakota, and reaching up into North Dakota and down into Missouri. It had bridged the Mississippi river at six places and touched the Missouri at almost as many points.

Coming of the Milwaukee to Moline and Rock Island was over the old Western Union line between Savanna and Port Byron. That road, promoted by Milwaukee interests, was completed in 1870, purchasing the Chicago, Rock Island & Pacific's stub line between Port Byron and Port Byron Junction, now East Moline, and using the Rock Island's tracks and terminals in the two cities. In 1881, the Western Union was absorbed by the Milwaukee, though the latter did not secure terminals of its own until 1900.

Prior to 1874, the Davenport & St. Paul Railroad Company was organized to construct a rail line from Davenport to St. Paul. This corporation built north from Davenport to Fayette, Iowa, with a branch from Eldridge, about eleven miles from Davenport, to Maquoketa, and crossing the C. M. & St. P. line at Oxford Junction. The company was reorganized in 1876, under the name of Davenport & Northwestern, and the property was transferred to the C. M. & St. P. in 1879.

Through co-operation with the Chicago, Burlington & Quincy, the Milwaukee eventually came into possession of a well-planned terminal system covering the Tri-Cities, including the suburbs of East Moline and Bettendorf, and also the joint ownership of a bridge across the Mississippi river and a line along the river to Clinton, Iowa. Several corporations were formed to execute plans for this development. The Davenport, Clinton & Eastern was organized in 1895 and completed the road from Davenport to Clinton in 1898. The bridge was built by the Davenport & Rock Island Bridge, Railway and Terminal Company. The different corporations were later merged as the present Davenport, Rock Island & Northwestern, the property being jointly owned and operated by the Milwaukee and Burlington companies.

In 1901 the Milwaukee completed a cut-off between Muscatine and Ottumwa, Iowa, and began operating its southwest service from Chicago

to Kansas City via the Tri-Cities. Tracks of the Rock Island are used between Davenport and Muscatine. Terminal yards were built at Nahant, just west of Davenport.

After the Spanish-American war, giving the United States a foothold in the Orient, the growing importance of Pacific coast trade was brought to the attention of middle western railroads. The Milwaukee, however, was the only one among them that saw fit to reach out for this business with a line of its own through to the western slope. Several years were spent in making surveys, and in April, 1906, building of the new trans-continental line was begun. This extends from Mobridge, S. D., westward across the Dakota prairies, the Montana plains and three great ranges of mountains, the Idaho panhandle, the eastern Washington hills and valleys and the Cascade mountains, ending on Puget sound at Seattle and Tacoma. The last spike was driven in July, 1909, making the completion of 1,500 miles of heavy construction. Freight service was inaugurated at once, passenger trains followed two years later, after the road had been brought to a high state of perfection and thoroughly tested. About seven hundred miles of this road, including sections with the heaviest grades, have since been electrified. The company was one of the first to make so extensive a change in its motive power, and the undertaking attracted the attention of railroad men all over the world. The economies effected have more than justified the added investment.

The Chicago, Milwaukee & St. Paul owns and operates its own sleeping and dining cars. It was the first to introduce electric lights on trains and the first to operate solid steel trains in trans-continental service. Its position has been one of leadership in every department of railroading. It now has 10,635 miles of track, traversing a rich agricultural territory, the greatest grain growing belt in the world, and placing it in touch with the world's markets, east and west. With its four lines radiating from them, and its comprehensive terminal system, it offers the Tri-Cities the best of service.

Officers of the Chicago, Milwaukee & St. Paul Railway are:

Mr. H. E. Byram, President; Mr. B. B. Greer, Vice-President, in charge of operation; Mr. R. M. Calkins, Vice-President, in charge of traffic; Mr. H. B. Earling, Vice-President, Seattle, Wash.; Mr. E. D. Sewall, Vice-President, Chicago; Mr. C. B. Ferry and Mr. George G. Mason, Vice-Presidents, New York City; Mr. J. T. Gillick, General Manager, Chicago; Mr. Macy Nicholson, General Manager, Seattle; Mr. H. E. Pierpont, Traffic Manager, Chicago.

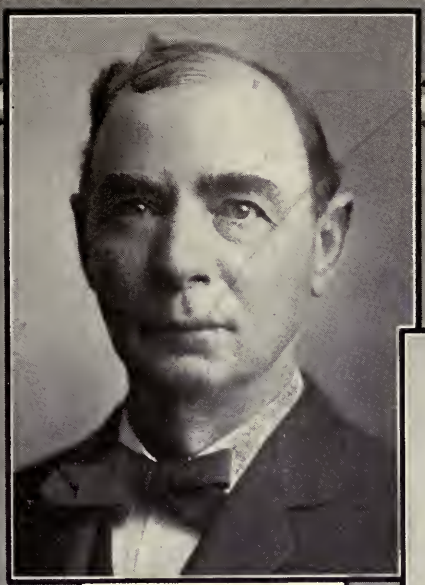
The Walsh Construction Company

Half a century ago, when the original shop buildings were in course of construction, a young Davenporter, Patrick T. Walsh by name, worked at Rock Island Arsenal as stonecutter. Marks of his chisel may be seen to this day upon many a block in those durable walls, for he spent eleven industrious years there, serving his apprenticeship and becoming a skilled workman.

More than forty years later the Walsh Construction Company, which this same young man had organized and made a power in its field, and to which he had given his life, came to the aid of the national government in the trying days of world conflict, and helped to complete Rock Island Arsenal as it stands today. Manned, equipped and organized for doing big things promptly and well, and still animated by the spirit of Pat Walsh, it quickly turned from peace work to war work. Many of the new storage and other buildings that sprang up on the Island during and immediately after the close of the war stand as monuments to its efficiency and patriotism.

Strangely enough, there is something more than a casual connection between the employment of Pat Walsh as stonecutter at the Arsenal and the services rendered during the World War by the company bearing his name. If the young man had not been a building tradesman on the Island, it is more than possible that there never would have been a Walsh Construction Company. For young Walsh lost his job. They said he was an agitator. He led a fight for an eight-hour day, winning the contest, but losing his standing with the bosses. And so, thrown upon his own resources, with a family to support, he became a contractor.

At first his undertakings were small, and his work gave little evidence of his latent abilities. From stone cutting he turned to dirt moving. He dug cellars and sewers, laid water mains, and gradually prepared himself for more ambitious things. Finally, after some years, during which he had managed to accumulate a little capital, he secured a contract to make a fill on the Chicago, Burlington & Quincy railroad at Galva, Illinois, and thus entered upon an era of railroad construction which probably has not been equalled by any other contracting organization in the United States. Thousands of miles of track have been laid and millions of yards of earth and stone have been moved. Single operations undertaken by the Walsh companies have involved the expenditure of millions of dollars. The reputation of Mr. Walsh as a builder and the magnitude of his resources may be judged by the fact that he was one of the few construction men asked to bid on the excavating of the Panama canal when it was planned to have the work done by private contract. Had that method been followed, there is



PATRICK T. WALSH,
Founder of the Company

THOMAS J. WALSH,
President

HENRY C. KAHL
Vice-President

little doubt that the Walsh organization would have figured prominently in the enterprise that connected the two oceans at the Isthmus of Panama.

For many years railroad construction of all kinds has been given special attention by the Walsh companies. Not infrequently, however, they have gone out of their particular field to erect buildings and bridges and to do canal, harbor and dock work. Besides the Arsenal work already referred to, some of the most notable undertakings in the Tri-Cities are the Kahl building and the upper four floors of the Blackhawk hotel in Davenport. Walsh companies have operated at one time or another in nearly every state in the Union. A fully equipped organization is maintained, capable of almost any enterprise in the line of construction.

In addition to work done at Rock Island Arsenal during the war, the Walsh Construction Company was extensively engaged in the erection of storehouses at the Savanna Proving Grounds, which are an adjunct of the Arsenal. The Symington plant at Chicago, another large supply depot, was also completed for the War Department, and much equipment was rented to the American International Ship Building Corporation for use at the Hog Island ship yards.

At Rock Island the company built a concrete general storage building, five vehicle storehouses, office building No. 2, civilian hospital, ward and isolation hospital, and bakery, and remodelled barracks "B" and "C" and the Y. M. C. A. building; the total cost being approximately $3,000,000.

In its earlier days the Walsh organization did considerable street paving, a number of the leading thoroughfares in the Tri-Cities having been improved. Latterly little attention has been paid to street and highway work. Most of the more recent railroad construction has consisted of widening cuts and fills, reducing grades, double tracking, and building yards, freight and passenger stations, engine houses, car shops and bridges. Much of the construction work of the New York Central is done by this firm. Other lines with which the company has had extensive business relations include the Hudson River road; Big Four; Cleveland & Youngstown; Erie; Chicago, Milwaukee & St. Paul; Chicago & Northwestern; St. Louis & San Francisco; Illinois Central, and New York, Chicago & St. Louis. During the current year (1922), the Walsh Construction Company undertook its largest contract in the building for the Hudson River Road of a bridge across the Hudson at Castleton, N. Y., together with grading on both sides of the river. This is a $6,000,000 job.

P. T. Walsh died March 16, 1916, at the age of sixty-one. In every good work in the community he had been a leader, and his interests were many. His company he left in capable hands of his own selection and training, and his influence is scarcely less potent now than when he was present in the flesh.

While Mr. Walsh was the dominant figure in all his enterprises, himself doing a prodigious amount of work, it was his faculty for selecting and

attracting other good men, and of uniting them into a highly efficient organization, that made his great accomplishments possible. The loyalty of employees, from the humblest shovelman to the highest paid engineer, was proverbial. That loyalty was won by a magnetic personality and retained by living up to every agreement with his men. The Walsh crews always fared a little better than any others doing the same kind of work. They were better paid and provided with better food and quarters. The Walsh equip-

WORK DONE BY THE WALSH CONSTRUCTION COMPANY AT ROCK ISLAND ARSENAL

Upper left---Drilling for foundation of six story concrete warehouse.
Lower left---Typical one story artillery vehicle storehouse, one of eight completed by this company, dimensions of each being 150x500 feet.
Upper right---View of six story reinforced concrete warehouse during period of construction.
Lower right---Temporary office building.

ment was never allowed to deteriorate. Mr. Walsh knew from experience in the years of his humble beginning that a man must be well fed, comfortable and satisfied with his conditions in order to give good service. Another influence that kept the organization keyed to a high pitch was the knowledge among those capable of larger responsibilities that they would be given their chance. Merit did not long remain unrecognized or go unrewarded. Many a man who started in an humble capacity with Mr. Walsh rose to a place of leadership and affluence, some directing branch companies bearing their own names. Among the auxiliary concerns thus formed were the Kahl Construction Company, the Walsh-Kahl Construction Company, the Walsh-Hogan Construction Company, the McGrath Construction Company, the T. J. Walsh Construction Company and the Walco Construction Company. The subsidiary concerns were merged in 1899, and incorporated under the laws of Iowa, and with the present name, P. T. Walsh being first president.

Present officers of the Walsh Construction Company are: President, T. J. Walsh; Vice-President, H. C. Kahl; Treasurer, E. P. Walsh; Secretary, M. A. Kennedy. The president and treasurer are sons of the founder of the concern. Headquarters are maintained in Davenport, with branches at Syracuse, N. Y.; Cleveland and Sydney, Ohio; and Chicago. Work east of Buffalo, N. Y., is handled through Syracuse; the Cleveland branch looks after general construction in nearby territory, while Sidney covers the field farther west. The Chicago office deals with building construction in all parts of the country.

The Company works on a departmental plan, which has been evolved during a long experience and has been found best adapted to the needs of the business. The financial, accounting and insurance department is under the direction of the president, secretary and treasurer. Railroad construction, including grading, concrete and bridge work, is handled through the president and vice-president, assisted by district and field superintendents on each contract. Each branch organization, when placed on a job, is complete in itself, carrying its own accounts, and with full facilities for the purchase of supplies, expediting traffic, handling repairs, etc., reporting direct to the headquarters office.

In general, the plan is designed to give elasticity. Each division, while working through one central control, is adapted to promote action by the local man in charge, so that emergencies may be quickly and efficiently met.

Necessarily the amount of equipment owned and controlled by the Walsh Construction Company is large. It includes standard gauge steam shovels, revolving shovels, drag lines, standard gauge twelve-yard dump cars, standard gauge 50-ton locomotives, Jordan air spreaders, camp cars, elevator grade outfits, teams, locomotive cranes, concrete mixers, together with necessary derricks, pumps, boilers, hoist engines, concrete cars, etc. Equipment is grouped in units, and is seldom moved except from one job to another.

Rock Island Plow Company

The Rock Island Plow Company, one of the foremost agricultural implement concerns in the world, maintains and operates extensive factories and warehouses in the city of Rock Island; branches are located at Minneapolis, Minn., Sioux Falls, S. D., Omaha, Neb., Kansas City, Mo., St. Louis, Mo., Oklahoma City, Okla., Dallas Tex., Denver, Colo., and Indianapolis, Ind. Its products are also handled by jobbers at various other places in the United States, and it is represented in many foreign countries. Its implements are found in every quarter of the globe where modern agricultural methods are followed.

The business was started in 1855, in a small blacksmith shop, by Charles Buford and R. N. Tate, under the firm name of Buford & Tate. This was the year after completion of the Rock Island Railway to the Mississippi River, and the city of Rock Island thereby assumed a new importance as a gateway to the great west, where millions and millions of fertile acres lay waiting for the coming of the plow. There was opening a vast market for agricultural implements, and the goods produced by Buford & Tate found a ready sale.

The first walking plows were made with patented steel shares and moldboards and were warranted to scour in all kinds of soil, and they did scour, thus securing the approval of the farmer, an approval retained to this day. Cultivators, harrows and stalk-cutters were also made from the beginning. The Black Hawk two-horse four-shovel cultivator was the first of its kind, and this style of implement has been of inestimable benefit in the production of corn.

Mr. B. D. Buford assumed control of the business during the Civil War, and the name was changed from Buford & Tate to B. D. Buford & Company. In 1881, the factory, then grown to impressive size, was destroyed by fire. Heavy loss was sustained by the owners, and it was necessary to re-organize the business in order to rebuild. The re-organization was effected in 1884, by the incorporation of the present Rock Island Plow Company. The late P. L. Mitchell and his son, Phil Mitchell, were prominent in the re-organization. In 1907 and 1910 the Mitchell family and their associates sold the bulk of their holdings in the company to a group composed of F. C. Denkmann, J. P. Weyerhaeuser, W. H. Marshall, T. B. Davis and S. S. Davis. Under the new control large additions were made to the capital, the manufacturing and storage facilities were increased, new branch houses were established, and the business greatly expanded.

In 1911 the "Great Western" line of cream separators, manure spreaders and litter carriers was acquired, and their manufacture was commenced at Rock Island; in 1912 the well-known "C B & Q" line of hay tools was taken over; in 1916, the patents pertaining to the "Rock Island Heider" tractor

were purchased, the factory machinery was moved to Rock Island, and soon after a large modern factory of saw tooth design was built and devoted exclusively to the manufacture of tractors. The popularity and consequent demand for the tractor soon forced the doubling of the factory in which it was made. The outstanding characteristics of the "Rock Island Heider" are its power, durability, reliability, ease in operation, and the facility with which it can be changed into a stationary power plant. The production of the tractor naturally led to the manufacture of specially designed plows, harrows and other implements for use with it. More recently the company has developed a winch attachment for the tractor, making it a very successful machine for pulling rods and pipe in oil wells; and it has begun the manufacture of a motor cultivator embodying novel and valuable features, and also the manufacture of a combination power unit, adapted to plowing, harrowing and cultivating, and to use as a stationary power plant.

The original small shop has now grown into a plant with forty acres of floor space for manufacturing and warehouse purposes. The factories are equipped with the best of modern machinery and contain many special machines invented by the company's employees to facilitate the economical production of goods of the highest standard. Among the special machines may be noted the automatic machine for making and ruling check rower wire for corn planters. This machine never fails to arrest the attention of visitors to the factory.

HOME PLANT OF THE

The company has been unusually fortunate in securing and retaining the services of exceptionally skilled workmen and mechanics, who have taken pride in producing goods of the finest quality. Many gifted inventors have contributed their ideas to the improvement of old and the creation of new implements. The moldboard plow was for years considered well-nigh perfect, yet in 1913 an expert of the company, by a new application of certain scientific principles, produced the "CTX" plow, the supreme triumph of plow making. The company was the first to produce a practical hay-loader—a machine which has relieved the farmer of much of the back-breaking labor of the hay field; it produced the first frameless sulky plow, and the first frameless lister—notable improvements in those tools; it was the first to make the disc harrow efficient by adding scrapers to clean away the soil adhering to the discs; and it has been the first in many other improvements, always striving to produce implements that would lessen the toil of the farmer and add to his prosperity.

The present officers of the company are:

President—S. S. Davis.

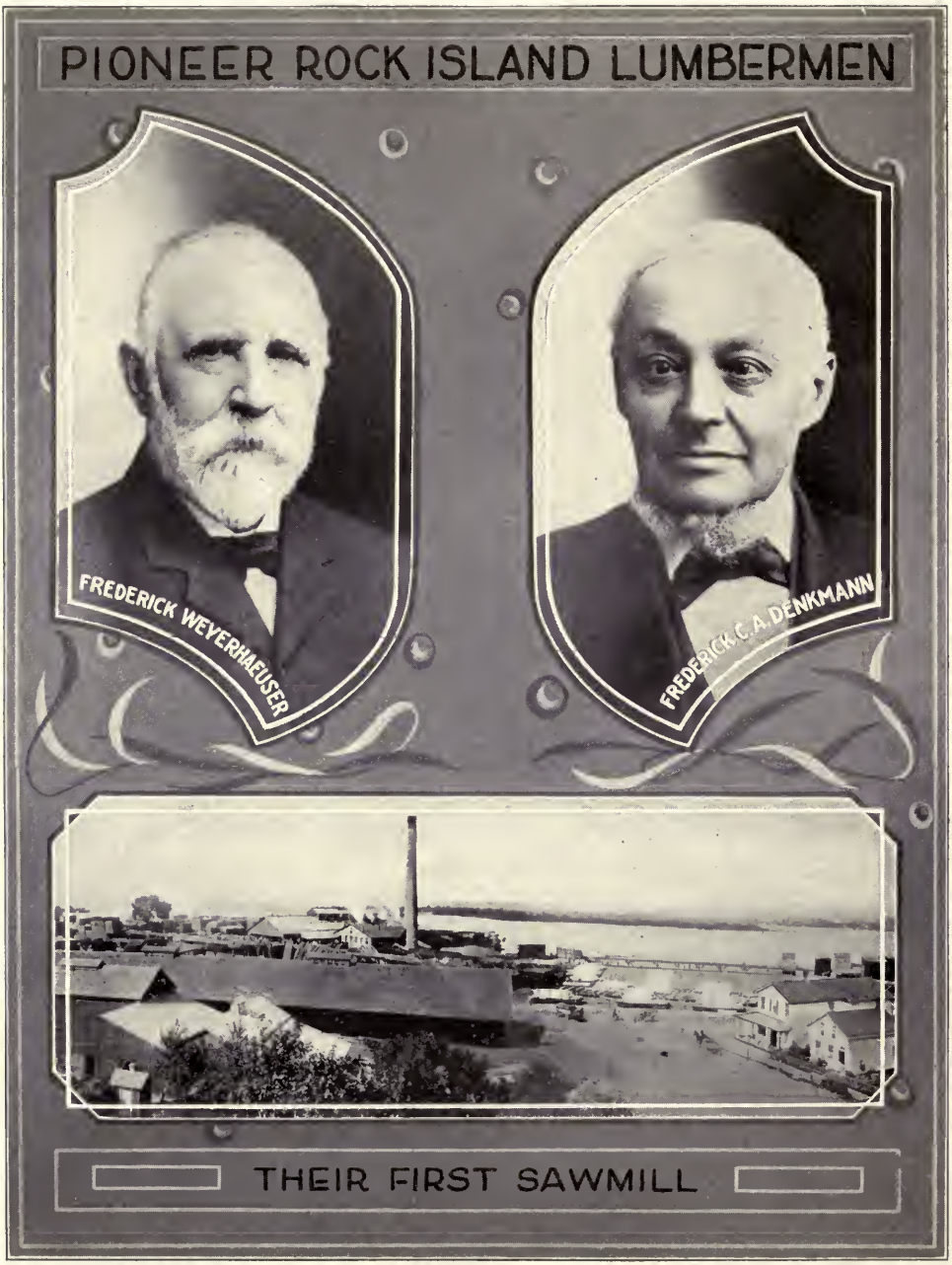
First Vice-President—J. P. Weyerhaeuser.

Second Vice-President—T. B. Davis.

Treasurer—F. C. Denkmann.

Secretary—C. E. Sharpe.

D PLOW COMPANY


PIONEER ROCK ISLAND LUMBERMEN
FREDERICK WEYERHAEUSER
FREDERICK C. A. DENKMANN
THEIR FIRST SAWMILL

Weyerhaeuser & Denkmann Company

Two men of marked capacity for sound, clear thinking, for hard, persistent work, and for getting things done in a big way united their interests, in 1860, when Frederick Weyerhaeuser and F. C. A. Denkmann, brothers-in-law, formed a partnership at Rock Island for the manufacture of lumber. From a small beginning this firm expanded rapidly, becoming in time, national in its scope, with large interests in many states and exerting a leading force in the organizing of both manufacture and sale of lumber and its products.

Mead, Smith & Marsh, operating a mill at what is now Fourth avenue and First street, Rock Island, succumbed during a financial panic in the late 50's, and Weyerhaeuser & Denkmann bought their holdings and began sawing lumber. At first the senior partner conducted a retail yard at Coal Valley, Mr. Denkmann running the mill. The original capacity was but eight thousand feet a day, but it was doubled the first year and greatly increased thereafter. The first band-saw used in the west was operated here.

Control of the old Porter Skinner mill on Sylvan Slough in Rock Island was acquired in the 70's. Out of this holding there grew the present Rock Island Sash & Door Works and the Rock Island Lumber Company. Late in the 80's the mill of Renwick, Shaw & Crossett, at Davenport, was bought. It was operated for a number of years, but burned in 1901 and was not rebuilt. A retail yard has since been conducted on the site.

For some time logs were bought at the mills from logging firms, but this method of getting raw material was not satisfactory, so standing timber in Wisconsin was acquired, and from that time on the firm cut and rafted all its own logs.

Rafts at first were floated down the river, guided by oars. About 1874 Weyerhaeuser & Denkmann bought the steamer, "C. J. Caffrey," which became one of the first raft boats used on the Mississippi for propelling rafts.

Most of the timber, of course, was cut on the small branches of the river. It was run down in drives to places where boats could go. Weyerhaeuser & Denkmann at first cut white pine on the Chippewa river, rafts being assembled at Beef Slough, Wisconsin.

Exhaustion of timber supplies that could be profitably rafted brought about, in a period of a few years, the abandonment of the many sawmills along the Mississippi. Weyerhaeuser & Denkmann operated their mill at Rock Island till November, 1905, when the last log was sawed.

The Weyerhaeuser & Denkmann Company was incorporated in 1902. Mr. Denkmann died March 2, 1905, and Mr. Weyerhaeuser in April, 1914. The business, with its many ramifications, is now conducted by their descendants.

The Rock Island Sash & Door Works

Economic pressure has forced many changes among lumber and lumber products concerns during the last generation. Exhaustion of former supplies of raw material have made it necessary to open new timber areas, to change locations and processes of manufacture and to substitute new varieties of wood for those which were becoming increasingly difficult to secure. The lumbering business of today has survived a rapid evolution which has forced numerous erstwhile competitors to the wall.

Dating back to the earliest days of lumbering on the Mississippi, the Rock Island Sash & Door Works has successfully met the vicissitudes of time and remains today one of the foremost industrial concerns of

Rock Island Sash & Door Works, Rock Island, Illinois

its kind. When raw material in the Wisconsin and Minnesota pineries became scarce its owners acquired stumpage elsewhere. When logs could no longer be profitably rafted down from the north they found other means of transportation. Early in the history of the concern manufacture and sale of rough lumber was subordinated to the production of finished goods, and in this line all competition has been successfully met from the beginning. For many years the output has consisted exclusively of sash, doors and various other kinds of millwork, both plain and veneered. The Crown door which it makes is standard among builders all over the country.

It was in the early 50's that Porter Skinner established what is now known as the Rock Island Sash & Door Works. Then, and for years afterward, raw material was brought, in the form of logs, rafted down the Mississippi from the north. The millsite was advantageously located on the banks of the river, with ample slack water in which to hold logs

in storage. Early in the 60's Mr. Skinner sold a half interest in his business to others, and the firm name was changed to that of Gray, Cropper & Company. In 1868 the original owner disposed of his remaining interests to Weyerhaeuser & Denkmann, who already were extensively engaged in lumbering in the locality, and the name was changed to Anawalt, Denkmann & Company. Incorporation took place in 1878 as the Rock Island Lumber & Mfg. Company, and the name was changed to the present one in 1897. This last reorganization took place about the time that timber supplies adjacent to the headwaters of the Mississippi failed and the rafting of logs became impossible. The old mills were abandoned, and since that time sawing of the rough lumber has been done mostly at the sources of supply and the lumber brought to Rock Island by rail.

Weyerhaeuser & Denkmann are among the largest lumber operators in the United States. In their hands the Rock Island Sash & Door Works has been ably conducted. It has been built and developed with a view of permanence. Never has it been more efficiently managed than in the last fifteen years, during which it has reached into new fields, found new

Southern Distributing Branch — St. Louis Sash & Door Works, St. Louis, Missouri

markets, improved its products and its processes. Its sources of supply are adequate for a long time and its goods sell on their merits throughout a wide area. In the last dozen years, in spite of periods of business depression, it has gone on steadily, without closing the plant or materially reducing the number of employes.

Like many another lumbering concern, the Rock Island Sash & Door Works has had its baptism of fire. Unlike many others, however, it rose from the ashes and with a better plant than ever, one which was not only built for permanence, but was much larger than the old one. The fire came in October, 1908, under conditions which all lumbermen dread. Originating outside the plant during a dry season, it came on at dead of night, fanned by a high wind. Successful resistance was impossible. Only those parts of the establishment which were outside the direct path of the

flames escaped. Not even the proverbial charred embers remained—only ashes and twisted steel, with a few blocks of masonry.

Not disheartened by the loss, the owners at once decided to rebuild. The new buildings were constructed mostly of brick and concrete and on a much larger scale. Every precaution to protect the plant against future fire losses was taken. Sprinklers were installed and a large steel tower built to provide an ample supply of water at all times and under all circumstances. Economical handling of materials during the process of manufacture also was taken into account, the new plant being considered a model among lumbermen. Everything is now under roof, no lumber being stored out of doors. Facilities for receiving raw material and those for shipping finished products are not excelled anywhere.

The factory of the Rock Island Sash & Door Works, with its houses for drying lumber and storing finished goods occupies four city blocks of land, including a frontage of two city blocks on the river. The property is bisected by railroad tracks used by three trans-continental lines. The location is central for the shipment of raw material, which is drawn from all points of the compass, and also for the distribution of manufactured goods in an area unexcelled anywhere on earth in productivity and buying power. A considerable share of the output is distributed through the St. Louis Sash & Door Works, a branch concern efficiently operated under the same excellent management as the main plant. Four hundred and seventy-five men are regularly employed in Rock Island and one hundred and fifty in St. Louis.

Officers of the company are:

President—F. C. Denkmann.

Vice President—J. P. Weyerhaeuser.

Vice President, Treasurer and General Manager—Charles Esplin.

Secretary and Assistant Treasurer—A. C. Hansen.

Directors—F. C. Denkmann, J. P. Weyerhaeuser, Charles Esplin, E. P. Denkmann, F. E. Weyerhaeuser, R. W. Weyerhaeuser, J. H. Hauberg.

From a One-Story Six-Forge Shop

The John Deere factory in Moline was built in 1847, on the site of the present John Deere Plow Works.

It was a one-story, six-forge shop used for making John Deere plows.

For ten years previously John Deere had been a plow manufacturer at Grand Detour, Illinois, where, in 1837, he had designed and built the world's first successful steel plow. He sold out his interests at Grand Detour and re-established his plow-making business in Moline, in order to get the advantages of better water power and better river transportation.

Moline at that time was a thriving little manufacturing village. A dam had been built in the river, creating an abundant supply of water power. Clustered on the shore and utilizing this water power were numerous saw mills, a large flour mill, a foundry and machine shop and a fanning mill factory. John Deere's little factory was the first implement-making enterprise in the village.

Numerous hardships were encountered by the new industry.

There were no banks in the country. Real money was a scarce article. A great deal of what little money was in circulation consisted of English, French and Spanish coins. Consequently, at the outset, the factory sometimes had serious difficulty in securing money with which to buy steel; and pay-day for the employees did not come at regular intervals. Plows were deposited with the merchants in Moline, Rock Island, Davenport and Muscatine, and the plow factory gave its employees orders on those stores for what they needed. Plow merchandising was done by leaving plows to be sold on commission by merchants of the surrounding territory. No money could be collected until the merchants had sold the plows and collected the money for them. Sometimes the factory had several thousand dollars' worth of plows in the hands of merchants, but not even a hundred dollars in the factory safe. One of the most critical times in the life of John Deere came one day in his first year at Moline, when it was necessary to raise $200 in cash, and early investigation indicated that there was not that much money in town.

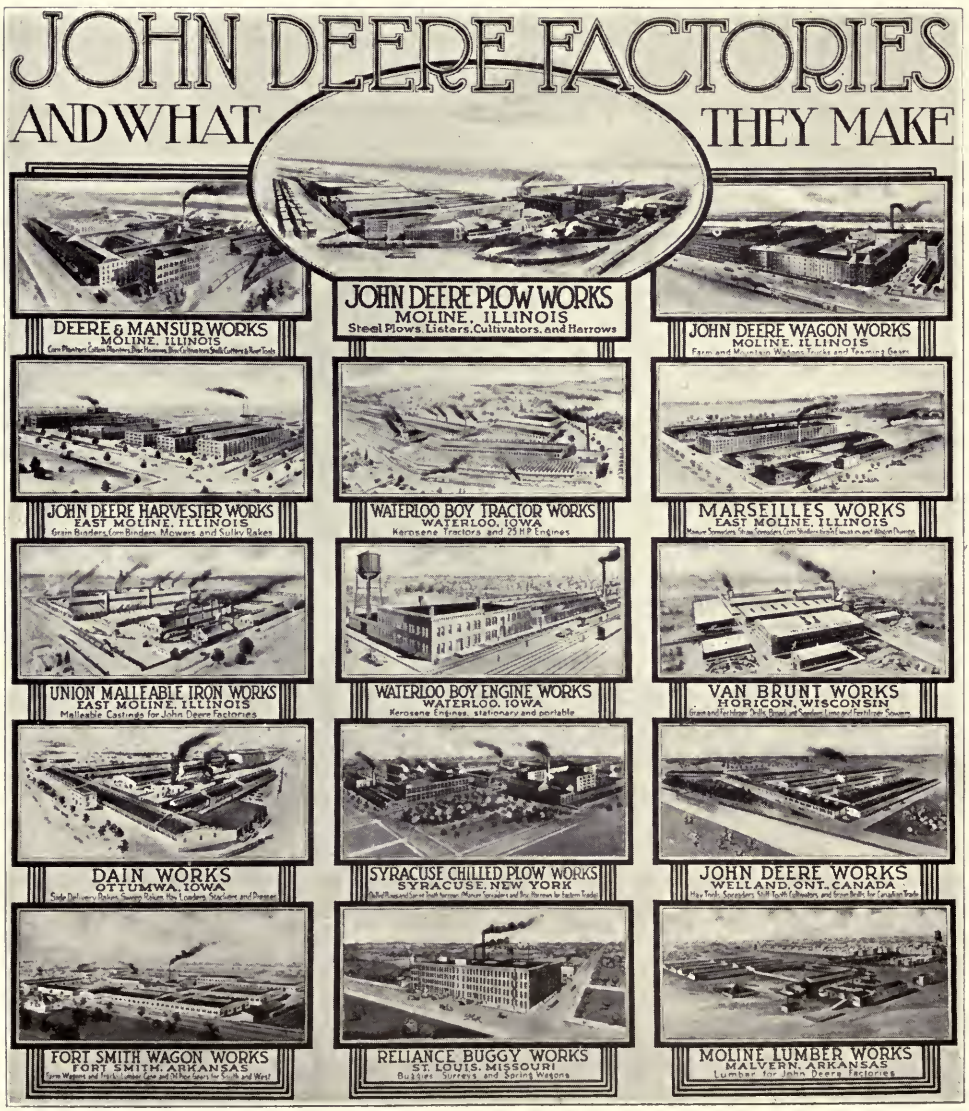
There were no railroads. A four-horse stage coach was the main means of overland transportation. It took from 36 to 48 hours to go to Chicago and much longer to go to St. Louis. The route to St. Louis was up the river road to Albany, east to Dixon and thence down through the center of the state to St. Louis.

River transportation, though fairly sure, was painfully slow. Steel for the plow factory was shipped from Pittsburg, down the Ohio to Cairo, Illinois, and thence up the Mississippi to Moline. Plow shipments were made

up and down the river to the more thickly settled sections, and wagons and teams were sent overland to transport the goods to interior communities.

In spite of many handicaps, however, the John Deere plow-making business expanded steadily. In 1852 the output rose to 10,000 plows—a notable figure for those days. Better times came with the rapid settlement of the great agricultural section of America, the building of railroads and the westward surge of commerce and money.

Larger buildings were erected, the output increased, and John Deere plows became known the world over. They were leading instruments in



changing the grass-matted haunts of the buffalo into fruitful acres. Much of the soil of Iowa, Kansas, Nebraska and the Dakotas, which now feeds a great part of the world, was first turned with John Deere plows. They came into wide use among the "colonos" on the broad plains of South America, among the Hottentots of South Africa, among the bushmen of Australia and on the great plains of Russia. Commerce throughout the world grew because of greater harvests produced through the use of John Deere plows.

Today there are few farms in America on which John Deere implements have not been used. The little one-story, six-forge John Deere shop of 1847 has become the Deere & Company of today, owning and operating fourteen John Deere factories and thirty-two John Deere branch houses.

The John Deere Plow Works, the direct descendant of the little shop and the parent factory in the John Deere organization of today, is the largest steel plow plant in the world. Its floor space is 1,500,000 square feet, or 35 acres. It produces 450,000 complete implements every normal year, or three implements every minute. It uses annually 50,000 tons of iron and steel, 2,500,000 gallons of fuel oil, 35,000 tons of coal and coke and 1,000 tons of oil and paint.

Two other large John Deere factories—the Deere & Mansur Works and the John Deere Wagon Works—are located in Moline, and the Marseilles Works, the John Deere Harvester Works and the Union Malleable Iron Company are located in East Moline.

Other John Deere factories are the Waterloo Boy Tractor Works, Waterloo, Iowa; Van Brunt Works, Horicon, Wisconsin; Dain Works, Ottumwa, Iowa; Syracuse Chilled Plow Works, Syracuse, New York; John Deere Manufacturing Co., Welland, Ontario, Canada; Fort Smith Wagon Works, Fort Smith, Arkansas; Reliance Buggy Works, St. Louis, Mo., and Moline Lumber Works, Malvern, Ark.

John Deere branch houses engaged in facilitating the economical distribution of John Deere implements are located at Minneapolis, Minn; Moline, Illinois; Des Moines, Iowa; Milwaukee, Wisconsin; Bloomington, Illinois; Omaha, Nebraska; Sioux Falls, South Dakota; Kansas City, Missouri; Oklahoma, City, Oklahoma; Denver, Colorado; St. Louis, Missouri; New Orleans, Louisiana; Nashville, Tennessee; Dallas, Texas; Atlanta, Georgia; Portland, Oregon; Spokane, Washington; Seattle, Washington; Boise, Idaho; San Francisco, California; Indianapolis, Indiana; Columbus, Ohio; Lansing, Michigan; Baltimore, Maryland; Syracuse, New York; Winnipeg, Manitoba; Saskatoon, Sask.; Regina, Sask.; Calgary, Alberta; Lethbridge, Alberta; Edmonton, Alberta; Welland, Ontario.

An export department, conducting a large business with foreign countries, is located at Moline.

United Utility Service

Transportation, Power, Light, Gas and Heat

Had it lacked the aid supplied by the united utilities of the Tri-Cities during the World War, the effectiveness of the Rock Island Arsenal would have been seriously curtailed. Street railway transportation for the many thousands of Arsenal workers, additional electric power to meet the demand for manufacturing purposes, and gas for the treatment of metals were absolutely necessary. The need for these services was urgent and unexpected, yet the capacity was available in all three cases and was supplied at low cost.

Official records show that the Arsenal and the Tri-Cities shared with Chicago the distinction of being the only manufacturing centers in the United States during the early part of 1918 where the lack of capacity of the public utility companies did not hamper the industrial expansion required to meet war needs, and recognition of this fact at Washington had much to do with the volume of war orders received by the Tri-Cities. Should the country again be called upon for military supplies to the same extent as was recently necessary, the showing made by the local Arsenal and Tri-City industrial concerns will warrant the confidence they will receive.

While it is true that there is now a water power development at Rock Island Arsenal sufficient for its ordinary requirements, yet it is necessary, as is the case with all other low head hydro-electric developments, that it be supplemented by a steam plant equipped to assume the load on momentary notice, due to failure on account of high water, low water, or ice. The Arsenal, having no steam power generating plant of its own, obtains this assurance of a constant energy supply from the power company serving the Tri-Cities, and when the demand for power required for war activities exceeded the capacity of the Arsenal station, the excess energy necessary was supplied on call. Energy was transmitted to the Arsenal over 4,800-volt transmission lines owned and maintained by the government.

The company's power house is located in Moline, directly across Sylvan Water from the main Arsenal shops, and adjoining the government's property. This plant is equipped with steam units having a maximum capacity of 61,000 horsepower, supplemented by hydro-electric energy purchased from the Moline Water Power Company and the hydro-electric plant of T. B. and S. S. Davis, on Rock river, these developments having a maximum capacity of 4,000 and 2,500 horsepower, respectively. At such times as the output of the government station exceeds the Arsenal requirements, this surplus is taken over by the power company. Approximately eighty per cent of the annual Tri-City power output is generated by steam, the balance coming from the hydro stations.

Industrial expansion in the Tri-Cities prior to 1918 had reached a point which would soon require additional electrical generating capacity, which led the power company, early in 1917, to order a 25,000 horsepower steam turbine, with the necessary boilers, auxiliaries, etc., this unit being received and installed in 1918, in time to meet the war demand. When ready for operation

Gas Works Peoples Power Co. *Moline Ill.*

Typical High Tension Transmission Line

Interior Substation "B" Peoples Light Co. *Davenport, Ia.*

View of Power House Interior Showing Large Turbo-Generator *Moline, Ill.*

the new turbine cost approximately $1,250,000. As this is written, plans are under way for an additional installation of 32,000 horsepower, to cost in the neighborhood of $1,500,000, which will increase the total power available for the Tri-Cities and the Arsenal to nearly 100,000 horsepower.

Gas for the Arsenal is produced by the Peoples Power Company at their gas works adjoining the electric plant in Moline, and is distributed through high pressure mains to the various buildings on the Island. Prior to the war the Arsenal used coal and oil for manufacturing purposes, but the convenience and practically unlimited supply of gas, together with results of research work which proved that gas was in many ways more efficient and economical, led to the abandonment of the coal and oil burners and their replacement by gas. The average war-time gas consumption of the Arsenal was approximately 5,000,000 cubic feet per month, far in excess

All communications must be addressed to "The Commanding Officer, Rock Island Arsenal. Rock Island. Illinois."

HLM/eb

ROCK ISLAND ARSENAL

ROCK ISLAND, ILLINOIS December 6, 1922.

532 Tri City Ry & Light Co.

B.J. Denman, Pres.,
Tri-City Railway & Light Co.,
Moline, Illinois.

Dear Sir:

In accordance with your recent request for statement of the activities at this Arsenal in connection with the late war of the associate utilities corporations under your charge, I have to inform you that your service included not only the providing of transportation facilities for Arsenal employees but the furnishing in large quantities of power and gas used in the plant's manufacturing operations.

The cooperation which the Tri-City Railway Company gave and the service it rendered throughout the period of the war, when the transporting of Arsenal workmen became a perplexing problem, enabled the Government to afford to its industrial workers facilities in this connection which few communities in other less congested industrial fields enjoyed.

The emergency incident to the war created, in some instances, demands in excess of the Arsenal's facilities. This was particularly true in the case of gas and electric power, both of which it was necessary to purchase in large quantities. At the outbreak of the war the increased demand for electric power made the modernizing of the Arsenal Power Plant necessary, and during the period of reconstructing the plant the purchase of power to supplement that which the Arsenal generated became necessary. The purchase of said power from the Moline-Rock Island Manufacturing Company (one of your associate companies) at a time when the requirements for power were heaviest enabled the Arsenal to pursue continuously its extensive production program, not otherwise possible had this contract not existed.

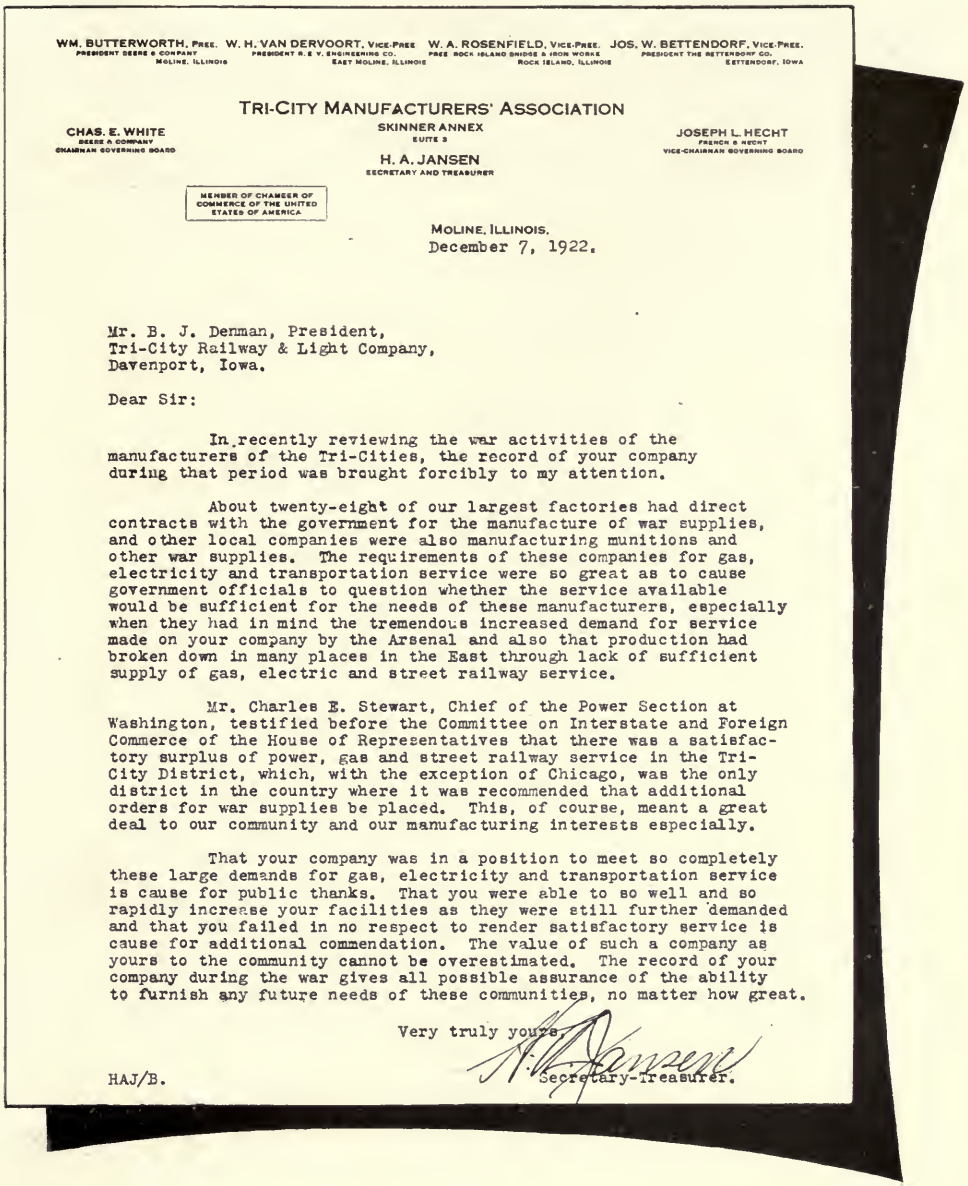
This was also true in the gas supplied by the Peoples Power Company. The increased manufacturing operations caused a consumption of twenty-five million cubic feet of gas during the fiscal year 1919 which the latter company furnished without interruption.

Respectfully,

D.M. King
Colonel, Ord. Dept., U.S.A.
Commanding.

of the normal requirements. To supply this and other rapidly increasing local demands, the company installed additional producing and distributing equipment at an expenditure of more than $300,000.

Street railway service to and from the Arsenal is furnished by the Tri-City Railway Company of Iowa and the Tri-City Railway Company of Illinois. With a line through the heart of the Island, connecting with



WM. BUTTERWORTH, PRES. PRESIDENT DEERE & COMPANY MOLINE, ILLINOIS
W. H. VAN DERVOORT, VICE-PRES. PRESIDENT R. I. E. V. ENGINEERING CO. EAST MOLINE, ILLINOIS
W. A. ROSENFIELD, VICE-PRES. PRES. ROCK ISLAND BRIDGE & IRON WORKS ROCK ISLAND, ILLINOIS
JOS. W. BETTENDORF, VICE-PRES. PRESIDENT THE BETTENDORF CO. BETTENDORF, IOWA

TRI-CITY MANUFACTURERS' ASSOCIATION
SKINNER ANNEX
SUITE 3
H. A. JANSEN
SECRETARY AND TREASURER

CHAS. E. WHITE
DEERE & COMPANY
CHAIRMAN GOVERNING BOARD

JOSEPH L. HECHT
FRENCH & HECHT
VICE-CHAIRMAN GOVERNING BOARD

MEMBER OF CHAMBER OF COMMERCE OF THE UNITED STATES OF AMERICA

MOLINE, ILLINOIS.
December 7, 1922.

Mr. B. J. Denman, President,
Tri-City Railway & Light Company,
Davenport, Iowa.

Dear Sir:

In recently reviewing the war activities of the manufacturers of the Tri-Cities, the record of your company during that period was brought forcibly to my attention.

About twenty-eight of our largest factories had direct contracts with the government for the manufacture of war supplies, and other local companies were also manufacturing munitions and other war supplies. The requirements of these companies for gas, electricity and transportation service were so great as to cause government officials to question whether the service available would be sufficient for the needs of these manufacturers, especially when they had in mind the tremendous increased demand for service made on your company by the Arsenal and also that production had broken down in many places in the East through lack of sufficient supply of gas, electric and street railway service.

Mr. Charles E. Stewart, Chief of the Power Section at Washington, testified before the Committee on Interstate and Foreign Commerce of the House of Representatives that there was a satisfactory surplus of power, gas and street railway service in the Tri-City District, which, with the exception of Chicago, was the only district in the country where it was recommended that additional orders for war supplies be placed. This, of course, meant a great deal to our community and our manufacturing interests especially.

That your company was in a position to meet so completely these large demands for gas, electricity and transportation service is cause for public thanks. That you were able to so well and so rapidly increase your facilities as they were still further demanded and that you failed in no respect to render satisfactory service is cause for additional commendation. The value of such a company as yours to the community cannot be overestimated. The record of your company during the war gives all possible assurance of the ability to furnish any future needs of these communities, no matter how great.

Very truly yours,

H. A. Jansen
Secretary-Treasurer.

HAJ/B.

a double track system at the west end of the Island and on Forty-second Street, Rock Island, it is in position to handle an almost unlimited number of workers, as was demonstrated during 1917, 1918 and 1919, when respective yearly totals of 1,731,557, 3,231,471 and 2,126,144 passengers were carried to and from the Arsenal. A maximum number of 50 cars was required to transport this huge and unprecedented traffic. The pre-war needs of the

Arsenal had been met with five cars, and the additional traffic necessitated the purchase of forty-five additional cars for this service alone. In addition to the expenditure for these cars, 2.31 miles of track were laid on the Island, bringing the total Island track mileage to 4.62.

The public utility companies referred to in the foregoing as serving the Rock Island Arsenal so ably in time of need are owned and operated by the Tri-City Railway & Light Company, a holding company organized in 1906 with a capital of $30,000,000, the operating headquarters of which are located at Davenport. This was a consolidation of the utilities of the Tri-Cities, which had heretofore been operating independently. The present officers and directors of the Tri-City Railway & Light Company are as follows:

President—B. J. Denman, Davenport.

Vice-President—Richard Schaddelee, Grand Rapids.

Vice-President—H. R. Tobey, New York City.

Vice-President and Treasurer—F. T. Hulswit, Grand Rapids.

Vice-President, Ass't Sec'y and Ass't Treasurer—H. E. Weeks, Davenport.

Secretary—H. E. Littig, Davenport.

Assistant Secretary—L. H. Heinke, Grand Rapids.

Directors—Officers and William Butterworth, Moline; G. M. Averill, Cedar Rapids, Iowa; Joe R. Lane, Davenport; C. N. Chubb, Davenport; R. B. MacDonald, Moline; J. G. Huntoon, Rock Island; Wm. Chamberlain, Cedar Rapids.

The operating companies serving the Tri-Cities are as follows:

Tri-City Railway Company of Illinois—Street railway service in Rock Island, Moline, East Moline, Silvis and contiguous territory; T. C. Roderick, Rock Island, Vice-President and General Manager.

Tri-City Railway Company of Iowa—Street railway service in Davenport, Bettendorf and Rockingham, Iowa; R. J. Smith, Davenport, Vice-President and General Manager.

Peoples Light Company—Serves Davenport, Rockingham and Bettendorf, Iowa, with gas and electricity; steam heating plant serving downtown section of Davenport; C. N. Chubb, Davenport, Vice-President and General Manager.

Peoples Power Company—Serves Rock Island, Moline, East Moline and Silvis with gas and electricity, in addition to wholesaling energy to a number of small towns in the immediate neighborhood; R. B. MacDonald, Moline, Vice-President and General Manager.

Clinton, Davenport & Muscatine Railway Company—Electric interurban connecting the three towns forming its name. Clark G. Anderson, Davenport, General Manager.

According to the 1920 census the total population of the territory served by the foregoing companies was 137,000. Electric customers total 30,368 and gas customers 28,791, these patrons being supplied with electricity over 1,859.3 miles of wire line and with gas through 445.33 miles of gas main (reduced to three-inch equivalent). Transportation lines in operation include 104.16 miles of single track equivalent street railway and 64.56 miles of interurban track.

The annual coal consumption of the Tri-City utilities is approximately 125,000 tons, or 2,500 carloads; which, if placed end to end, would form a train 30 miles long. Gas manufacture requires 600 cars of coke and 550 cars of oil each twelve months. The working forces of the various operating companies total about 1,200 men and women.

The amount expended by the operating companies for improvements, betterments and extensions in the ten-year period from 1912 to 1922 aggregated $7,975,436. This large amount of capital required to take care of utility expansion in the Tri-Cities has been furnished by the United Light & Railways Company since 1912, when it acquired the Tri-City Railway & Light Company. In the last two years capital to finance local requirements has been provided to a constantly increasing extent through customer ownership of United Light securities, which have been sold almost exclusively to utility patrons by company employes, the company's prior preferred stock now being sold to Tri-City residents at a rate in excess of $700,000 per year. Company and consumers have thus become partners in the upbuilding of their community, and the confidence engendered by a better understanding of the mutuality of interests is evidenced by the spirit of wholehearted co-operation and general good will now prevailing.

The Tri-City Railway & Light Company has always pursued a progressive policy, its aim being to anticipate public needs and thus encourage the growth of the cities it serves. In its endeavor to maintain the closest possible relations with the public by keeping them informed of the practical problems involved in the operation of its properties the company feels that it has succeeded to an unusual degree.

The utility companies of the Tri-Cities, prior to their consolidation in 1906, were developed for the most part by home capital. The story of their progress forms an interesting chapter of local history, and the aggressive enterprise of the three communities can be shown in no better way than by the steady improvement in utility service.

For the beginning of the history of Tri-City utilities we must go back to 1843, when what was known as the Sears dam was constructed to develop water power at Moline. Because of the crude methods of distribution prevailing at that time, the use of energy generated there was limited to the immediate vicinity of the plant, resulting in the erection of several small factory buildings at each end of the dam, which formed the nucleus of

Moline's later industrial development. When more efficient electrical transmission became available some forty years later the water output was taken over by the Peoples Light & Fuel Company (predecessor to the present Peoples Power Company) for general distribution throughout the community.

Gas plants were established about the time the three cities were emerging from the village state, the Rock Island Gas, Light & Coke company first

furnishing service in 1855, and the Davenport Gas Light & Coke Company three years later. The first alternating current generator in what was then termed the west was installed in Rock Island in the early 80's. One of the first, if not actually the first, electric street car successfully operated in the United States was run on the Brady Street line in Davenport, in August, 1888. The first electric street car was operated on Arsenal Island for exclusive Arsenal service December 28, 1899.

Since the purchase of all local utilities by the Tri-City Railway & Light Company in 1906, the economies and efficiencies resulting from unified operation have evidenced themselves in a higher degree of service at a lower cost to the consumer than is enjoyed in other cities of similar size and wealth throughout the country.

The R&V Motor Company

Second only in importance to Rock Island Arsenal in the Tri-City field in the actual production of war munitions, the R. & V. plant in East Moline rendered valuable service to the United States and its allies during the world conflict. Ammunition and ordnance were manufactured in quantity, a great shop being built especially for this work, and large numbers of tools were supplied to other private concerns engaged in filling War Department orders. The contribution of this industry toward the cause of the allied governments may be summarized as follows:

W. H. VAN DERVOORT,

for many years head of the great R & V business in East Moline, which was named with the initials of himself and his associate, Mr. O. J. Root. Mr. Van Dervoort's death in 1921 was in a large measure the result of overwork during the war, when he served as a member of the National War Labor Board and the Munitions Standard Board, in addition to directing the R&V production of ammunitions and ordnance. He was internationally known as an engineer and automobile manufacturer.

Shells, 8-inch high explosive and 8-inch gas, to the number of hundreds of thousands, delivered to the British and the United States governments; hundreds of guns, of 4-inch and one-pound size, and large numbers of mounts, sights and gun stands for 3-inch and six-pounder guns.

Large numbers of specially designed machine tools for manufacture of ammunition was furnished to the British government and Canadian and American contractors.

Great numbers of motors manufactured for use in tractors.

Enlistment and induction into the military service of 460 employes of various degrees of mechanical and technical skill.

Liberty bond subscriptions amounting to $1,077,060, exclusive of first loan.

War saving stamps purchases of more than $18,000.

Services of W. H. VanDervoort, president, as member of Munitions Standard Board and the National War Labor Board.

Some of the things it was necessary to do in order to manufacture munitions on the scale indicated were:

Construct the buildings used for the shell shop.

Equip the shell plant with specially designed machinery, produced chiefly in the engineering company's own plant.

Organize a force capable of producing hundreds of 8-inch shells daily.

Replace one of the important buildings, the heat treating plant, which was destroyed by fire.

Organize a great corporation to handle the ordnance contracts in conjunction with the Wagner Electric Manufacturing Company of St. Louis.

Build an ordnance plant with 130,000 feet of floor space and equip it with more than 400 specially designed machine tools.

Replace hundreds of workers who entered the service, and in addition recruit new help for the added departments till the total number of employes approached 3,000.

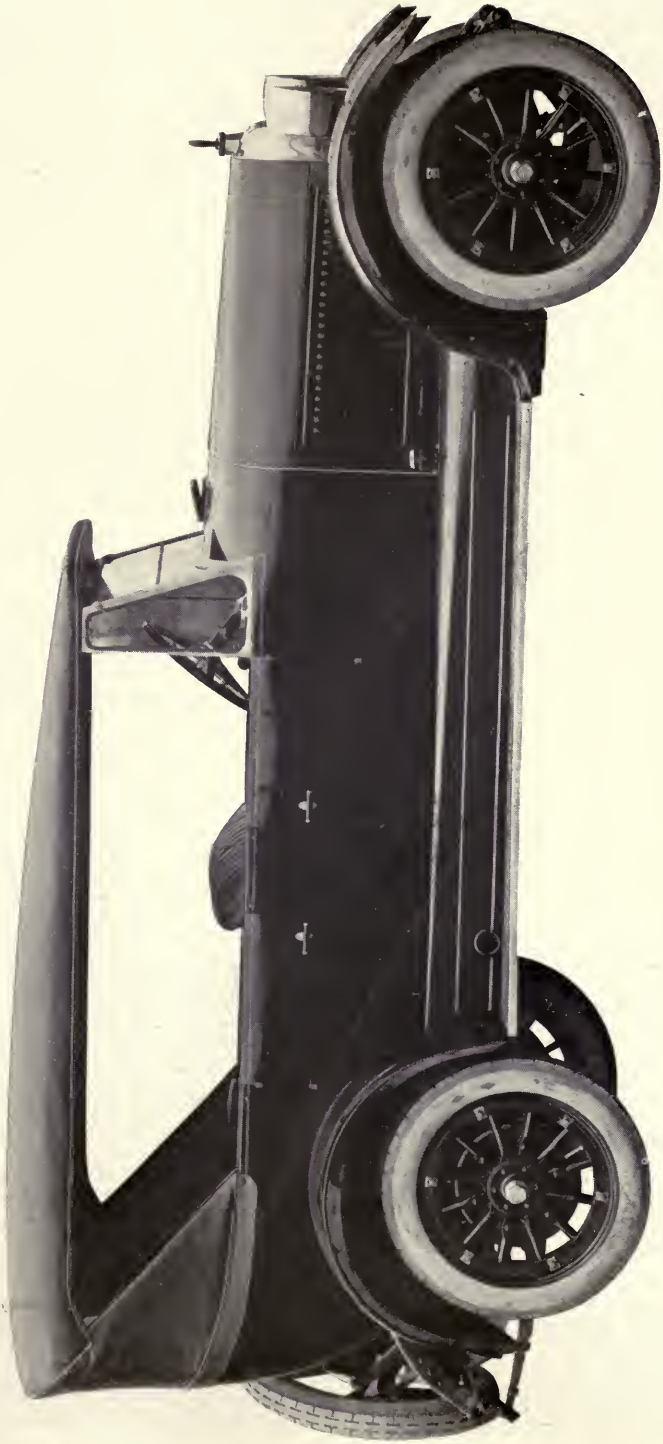
In order to keep the shops working to full capacity night and day, which was the rule during the war, women workers were introduced, the maximum number employed being 500.

The help problem brought with it the one of housing workers in the near vicinity. The company financed the building of two hotels that were conducted under the auspices of the Y. M. C. A.; and mainly because of its needs, East Moline was included in the cities where government house building projects were approved, the number of dwellings constructed there being 111.

The R&V plants, operating now under the name of the R&V Motor Company, always have been leaders in the industrial field. In the early days when the manufacture of stationary and portable farm engines was its principal business, the Root & VanDervoort Engineering company became a major factor in that industry. It contributed materially to the development of internal combustion gasoline engines, and sold hundreds of thousands of them for use in all agricultural countries of the world. In 1904, when it took up automobile manufacturing, it quickly won like recognition, its products being repeatedly winners in economy and reliability runs. When, in 1913, it adopted the Knight engine as its automobile power equipment, it developed an engine that broke all world's records in an endurance test and established marks still unbeaten and unchallenged. In the bus motor field, where the power equipment requirements are most severe, it won immediate recognition.

When the United States entered the World War it found the R&V company with a plant and equipment ready for immediate service, and this fact gave the company a great advantage in securing contracts as well as in supplying tools and patterns to other concerns. Long before this country became involved, the British government had turned to the United States for munitions, and the R&V company was one of the private manufacturers which undertook the work on a large scale. It made high explosive and gas shell, supplying Great Britain with great quantities of them. On the completion of its contracts, the R&V management, convinced that ultimately it would be called upon again by either the United States or Great Britain for further supplies of ammunition, sealed its shell shops and kept intact its equipment. Up to this time, in addition to executing its contracts for shell, it had designed new machinery which greatly increased manufacturing efficiency in the making of shell, and had, at the suggestion of the British government, sold large numbers of shell lathes to other manufacturers.

Thus it happened that when Uncle Sam entered the struggle he found the R&V plants ready to produce on very short notice, and so they became



R&V KNIGHT SIX
This is the latest model of a long line of high grade motor cars built by the East Moline factory since it first entered the automobile business in 1904. It is known as the Model H, and is being put on the market in 1923.

the most important auxiliary to Rock Island Arsenal in munition production to be found in this community. Troops were at once placed on guard to protect the company's facilities for the making of shell and ordnance, and in a short time the plant was again engaged in war production. At first, attention was devoted mainly to machining the 8-inch gas shell. Then came a proposition to undertake the production of naval ordnance. To provide adequate facilities for this, a great new building was constructed. It was 706 feet long and 165 feet wide. Thus equipped, the R&V company for many months produced three-fourths of the 4-inch guns supplied by private manufacturers for the United States Navy. One contract completed, others were awarded, and sights and mounts for 3-inch rifles and 1-pound guns for submarine chasers were added to the 4-inch guns which the company originally undertook to produce.

How well the R&V organization served the United States and its allies may be judged from the fact that of all the shell machined, 227,000 in number, only 159 were rejected by government inspectors; and of the 1,165 guns built, not a single one failed to pass the very exacting tests to which they were subjected, and every one was accepted by the navy.

Farm and tractor engine production, being considered necessary in the campaign for more foodstuffs, was continued during the war, and at the close of the conflict the company turned again to this field, as well as resuming the building of automobiles, which had almost ceased. In pursuance of its policy of constantly advancing its standards, it shortly brought out a six-cylinder Knight motor, a type not then being produced by any other

PLANT OF THE R&V MOTOR COMPANY — This fine building was originally built to handle the prod
R&V Knight automobile. It is one of the best arrange

manufacturer in this country. It also put on the market a new four-cylinder model, a great step forward in this class, in which it had been a leader for a number of years.

Not only did the R&V institution successfully weather the acute industrial depression which followed the war, but it made real progress. It liquidated its heavy inventories and advanced its position in the industry, passing more than thirty important companies which previously had exceeded it in volume of sales. It was one of only four companies which in 1921 sold a greater number of cars than in 1920, and the only one to double in 1921 its 1919 aggregate sales.

Not content with these achievements, the company set about the task of developing an engine that, in performance, should mark a new era in the six-cylinder automobile field in this country. This motor, placed in a new and greatly improved car, is to be put on the market in 1923. Exhaustive preliminary tests proved that it would meet every expectation, with a volume and flexibility of power and smoothness of operation that previously had been the unrealized dream of every automotive engineer.

The Root & VanDervoort Engineering Company grew from a one-room upstairs specialty shop in 1897. It progressed only because of the capacity of those who have directed its affairs and their superior ability in engineering development. Its war service is attested by the volume of business it did with the United States government and its allies. The highest achievement of the R&V industry is its Knight-Six motor and car.

of naval ordnance. After the war it was converted into an automobile factory for the manufacture of the most perfectly lighted manufacturing plants in the middle west.

The Federal System of Bakeries

About six years ago a man stood in front of a bakeshop looking at some tempting rolls and cakes displayed on a dirty shelf in a dingy, unkempt bakery. As he stood there thinking of the conditions under which these delicious-looking cakes and rolls were probably made, there came to his mind the picture of a spotlessly clean, well lighted bakery, with the baked

J. Reed Lane, President

products made in a rotary oven "right before your eyes." That man was Milton Feder. With this idea in mind, he secured a patent on a revolving oven and organized the "Chatterton System of Bakeries."

The first bakery of this system was opened in Oakland, California, and proved a big success. People flocked to the store, attracted by the novelty of seeing the brown, crispy loaves baked right before their eyes. Several more shops were opened in California, and then it was decided to make them a national institution. In 1918 the company was reorganized under its present name, Federal System of Bakeries of America, with headquarters in Chicago, to standardize and supervise these bakeries. A few months later the offices were moved to New York.

In the fall of 1918 two Federal stores were opened in Davenport by W. C. Swigart and Wm. R. Doran, which were later purchased by L. J. Yagge and A J. Faerber. These stores proved immediate successes.

About this time J. Reed Lane, of Davenport, became interested in the novel methods employed by this company and the apparent favor with which they were meeting. He acquired interests in the company and was elected Treasurer. Other Davenport men followed his lead, and in January, 1920, the city of Davenport became the home office of the company. Mr. Lane was elected President and Wm. L. Mueller, Joe R. Lane, Maurice Hemsing,

Left—Federal System of Bakeries New Home in Davenport. Right—Exterior and Interior Views of Typical Federal Bakery.

A. J. Faerber, Charles Shuler, G. Watson French, Ed. C. Mueller, Milton Feder, T. J. Walsh and J. W. Bettendorf, directors. The central location of the home office offered many advantages. It not only enabled the officers of the company to keep in closer touch with the stores in all sections of the country, but placed them in direct contact with the wheat-producing and milling centers of the country.

In the fall of 1919 a Federal School was established in the old St. Luke's Hospital, at 8th and Main streets, Davenport. Here men were given a

thorough course in technical and practical baking and merchandising which fitted them not only to operate Federal stores under sanitary and modern methods, but how to make good bread.

Federal bakeries are installed under a license system with a royalty clause attached. In return for this royalty, the licensees are given service under the supervision of twelve departments, Sales, Equipment, Purchasing, Stores and Traffic, Operating, Sales Promotion and Advertising, Auditing, Installation, Insurance, Chemistry and Research, Mail and Record, Legal and Executive. Each department is organized to give prompt service under the direction of an expert in his line of work. All advertising is done on a national scale and is handled direct by the home office. Similar suggestions and methods of advertising are thus distributed to every Federal Bakery. A monthly magazine, "The Sunlight Magazine," keeps all managers and employees familiar with general conditions and methods of improvement of their stores.

"Quality and Service" is the watchword of Federal Bakeries. Standard formulas used in all stores call for the best ingredients, substitutes being absolutely prohibited. Only the best of flour is used, which is tested before use in the company's laboratories at the Federal School. Not only are the raw materials analyzed under the direction of one of the leading chemists of the country, Dr. J. Sluyter, but a sample loaf of bread is forwarded monthly from each store to the laboratories to be tested for quality. Each loaf must receive a rating of over 95 per cent before the store can be awarded a certificate of Federal quality. From Maine to California and from Toronto, Canada, to Tampico, Mexico, the patrons of Federal bakeries are assured of a uniform quality of baked goods of the highest type obtainable.

It is not too much to say that the Federal System of Bakeries of America, Inc., dominates the baking field, setting its standards for quality and service. In 1921 the estimated total business done by Federal bakeries amounted to $20,000,000. The loaves of bread baked daily, if placed end to end, would cover a distance of seventy-five miles. "The proof of the pudding is in the eating"—and the Federal System of Bakeries has established over 400 bakeries in some three hundred towns in a period of five years and is steadily developing new territory until its slogan "Bringing Home the Bakin'" is a household expression in every home throughout the United States.

The Bettendorf Company

We often marvel at the rapid mechanical advancement of this age. To refer to it is to deal in the trite and common-place. And yet it has been achieved in the face of many handicaps, not the least of which is nature's failure to implant in the average individual of inventive turn enough of the practical to enable him to utilize to best advantage the product of his genius.

W. P. Bettendorf, Founder of the Company

This defect in man's make-up has been responsible for a prodigious waste of capital and time in connection with really workable ideas that never got beyond the formative stage, and has deprived the race of the earlier use of an untold number of devices that would have lightened toil, increased production and made life generally more worth the living.

The patent office at Washington is a morgue for the dead hopes of inventors who did not realize till too late that it requires the application of business principles to successfully make and sell even the most perfect and useful inventions. In all too many cases those who have lived to see the products of their genius in general use have been deprived of their just rewards by reason of their inability to grapple as successfully with the practical as with the theoretical end of their enterprise, others reaping the harvest that rightfully was theirs.

The late W. P. Bettendorf was one of the conspicuous exceptions found in the modern industrial field to the rule laid down in the foregoing. Not only was he possessed of rare mechanical ingenuity, but he was resourceful to a marked degree in applying his ideas, and highly successful in organizing, manufacturing and selling, and in financing his undertakings. Further than that, he was fortunate in having a brother, J. W. Bettendorf, who, when the former was called from earth at the very height of his activities, was able to carry on and bring the industry to the place of leadership in its field which it now occupies. The capabilities of J. W. Bettendorf are no less marked than those of the founder of the concern, and under his administration the company has greatly expanded, becoming by far the largest single

industry in the Tri-City community. Its shop buildings cover 24 acres of ground and its annual business runs well into the millions. It is one of the principal manufacturers of railway equipment in the country, specializing in steel freight cars. Over one and one-half million Bettendorf truck side frames are now in use.

J. W. Bettendorf, President

The foundation of the great Bettendorf industry was a practical idea, and, strangely enough, it had nothing to do with railroad equipment. It brought into existence a new type of metal wheel and the machinery for making it, both being the product of the genius of W. P. Bettendorf.

In 1886, Mr. Bettendorf, then a young man, brought his ideas and the letters patent protecting them to Davenport, near three great agricultural implement factories, and set about forming a company to begin production. Here his efforts were as successful as they had been in dealing with the mechanical end of the undertaking. In a short time the first shops were in operation. The type of wheel made, it may be added, was soon recognized as ideal for use on agricultural implements and the concern which Mr. Bettendorf founded remains today the largest exclusive makers of metal wheels in the world.

As soon as his first venture was well on its way toward success Mr. Bettendorf set about looking for new problems to solve. His active mind shortly developed a steel gear for farm wagons. Closing out his interests in the metal wheel concern, he formed another company to manufacture farm wagons. This also prospered greatly and soon assumed large proportions. Then, gradually, he turned to the making of railroad equipment, in which steel was being used in rapidly increasing quantities. First, the I-beam car bolster was invented, and later the one-piece cast steel truck frame and other steel parts for freight cars were perfected. Finding a ready demand for these lines, the company decided to turn its entire attention to their production, looking forward, even then, to the making of complete cars. Its growth from that time on was phenomenal.

Early in the manufacturing career of W. P. Bettendorf his brother, J. W. Bettendorf, became associated with him, and as the business grew

the latter, in an executive capacity, took an increasing share of the responsibility. His versatility and steady devotion to the firm's interests prepared him for the part he was ultimately to play and entitle him to much credit for the earlier, as well as for the later, successes the concern achieved.

J. H. Bendixen, Vice-President and Sales Manager

In 1902 the industry had outgrown its quarters, and so forty acres of land just beyond the eastern limits of the city of Davenport, and on the banks of the Mississippi river, were purchased, and the first factory buildings there were erected. This was a fortunate move, for additional room was available as it was needed. The plant has been gradually built up during the intervening years to its present immense proportions. To provide a place of residence for factory workers, a town-site was laid out adjacent to the shops and named Bettendorf. This has now grown into a city, with a city's improvements and advantages.

First experiments in the manufacture of cast steel trucks had begun with the forming of the Bettendorf Axle Company in 1895, but slowness in the development of the process of making intricate steel castings deferred the perfecting of the Bettendorf invention. Not till 1903 were truck side frames actually produced, and then in only a small way. Their use soon proved their superiority, and arrangements were made with one of the principal steel castings manufacturing firms for quantity production. As time passed and the new frame became more and more popular, castings orders were placed with other makers.

To secure uniformity of product in the various foundries it was necessary for the Bettendorf company to supervise the making of the castings, and to install in each plant its specially designed hydraulic straightening presses, by which the various parts were aligned and tested. In pursuance of the same object, elaborate records were kept of the performance of thousands of trucks in use. This made possible, also, a more intelligent selection of materials and the prevention of defects. As a result of these precautions, Bettendorf products rapidly built up a reputation for strength and reliability, and a fund of experience was gained which was of im-

mense value later when the company undertook the making of all its own parts. It became evident that open hearth steel was best adapted to the casting of steel car frames, and that certain qualities must be incorporated to resist the shocks and stresses to which cars in service are subjected. Perceiving finally that the most economical and satisfactory way to get desired results was to do its own casting, the company, in 1909, began the erection of a foundry, which was placed in commission during the following year.

Built originally with three twenty-five-ton furnaces, the foundry has been enlarged from time to time till it now has seven units which make all castings for car trucks, and together have an annual capacity of 320,000 side frames and bolsters.

In the arrangement and equipping of its foundry the Bettendorf company scored a great mechanical and engineering triumph. Based as it was upon experience obtained in a wide field and under varying circumstances, it embraces features not found elsewhere, and turns out a superior product. Exceptional strength and uniformity in all parts of the same casting, as well as between the separate pieces, is insured by treatment in specially designed annealing furnaces, which is also a purely Bettendorf creation. Proof of the effectiveness of the Bettendorf process is to be had in the exceedingly low percentage of replacements because of defects.

While the Bettendorf industry was at the height of its expansion program, W. P. Bettendorf was called by death, the end coming June 3, 1910. For a time it was feared that the loss of his leadership would permanently check the growth and usefulness of the concern in which he had played so important a part. Such forebodings, however, were ill-founded. J. W. Bettendorf, the surviving brother, proved equal to the heavy task laid upon his shoulders. Assuming the added responsibilities, he went ahead with

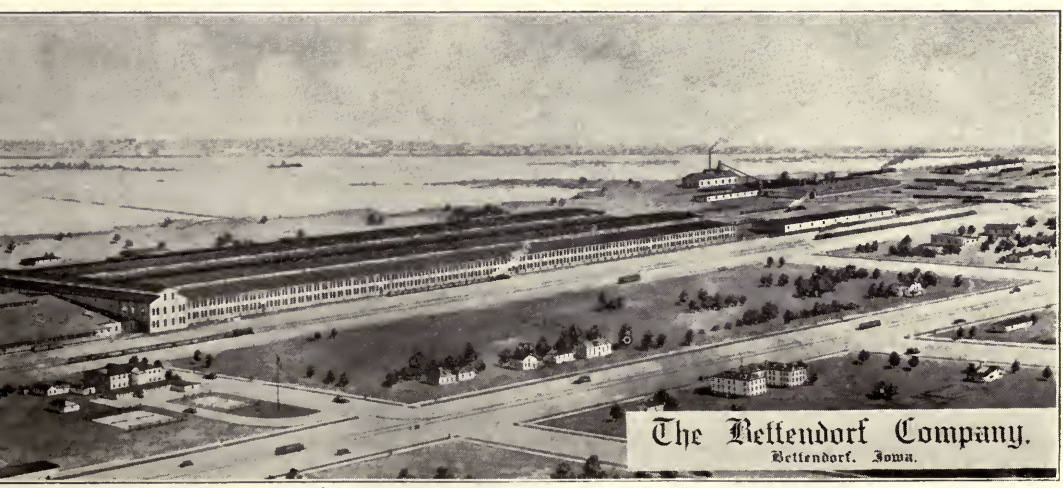
Birdseye View of Bettendorf Plant wi

the plans for enlargement, and the achievement of the company since has been largely due to his efficient direction. In 1913 a reorganization on a broader basis took place, with J. W. Bettendorf president, J. H. Bendixen vice-president and manager of sales, and a large and competent staff of subordinate officers.

During the World War the company felt that it could do its bit more effectively in manufacturing railroad equipment, then so badly needed, rather than by rebuilding much of its shop equipment for the production of munitions. It filled an order from the United States Railroad Administration for 3,000 box cars and supplied trucks for 30,000 other cars, which was its major contribution to the industrial effort of this country. In addition, it gave some attention to the machining of artillery recuperators and the making of trench mortar forgings. Had the war continued another year, it is probable that munition manufacture would have been undertaken on a much more extensive scale. At the time the armistice was signed the concern was working on an order for casting and machining wheels for four-wheel drive trucks. This order, which was for equipment for 7,500 vehicles, was not completed, and special machinery installed for the work was thereafter useless. Plans were in hand at the time hostilities ceased for the assembling of 1,500 Mark VIII tanks, involving the handling of a vast amount of material, but no actual work was done.

As in the case of other industries, the Bettendorf organization was handicapped by withdrawal of some of its best men to enter the service. The number who went from its shops and offices to take up arms was 124.

The company specializes in one type of car truck, upon which it stakes its reputation and in which it embodies the best materials and methods of construction that Bettendorf brains can devise and Bettendorf resources provide. The present plant has a capacity of 320,000 side frames and bolsters and 30,000 underframes, or 12,000 completed cars per year.



ssippi River and Illinois Shore in Distance.

Augustana College

Augustana College is one of the early educational institutions of Illinois. Pioneer settlers who came from the East and from Northern Europe to the upper Mississippi valley in the 40's and 50's at once felt the need of an institution for general education and for the training of ministers and

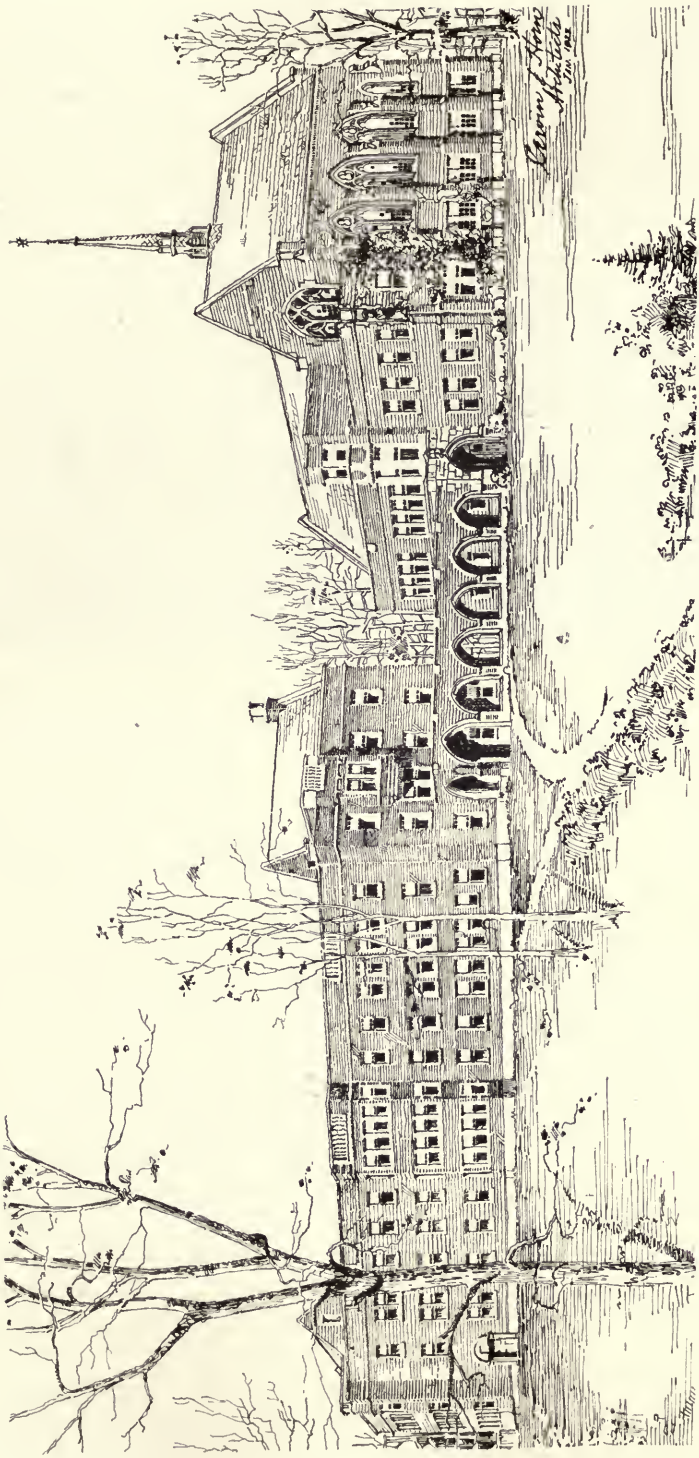
Older College Buildings

teachers. Augustana College and Theological Seminary was founded by these pioneers in 1860.

From the beginning Augustana College felt it to be its duty to serve the state and community, as well as the church. During the Civil War the growth of the institution was impeded, as the prospective students enlisted in the Union army. After the close of this war the development has been steady, and the College has now grown to number a thousand students.

During the years 1860-63 this institution was located in Chicago; during the following twelve years it was located at Paxton, Ill., and in 1875 Augustana College found its permanent home at Rock Island. The buildings comprise Old Main, Dormitories, one for young men and one for young women, and Science Hall. The gymnasium is one of the best buildings for its purpose in the state, with running track and swimming pool. On account of its size (90x140), it is also used as an auditorium, the acoustics being perfect. Citizens of Rock Island and Moline assisted generously in contributing to the expenses for erecting this gymnasium.

The most beautiful building on the grounds is the Denkmann Memorial Library, erected by the children to the memory of the parents, Mr. and Mrs. F. C. A. Denkmann. In this library building are housed the administrative offices of the Augustana College. Four stories of modern stacks give ample room for the books; the offices of the library are on the second floor. In the beautiful architecture of this building, the reading-room has been ac-



Seminary Buildings in Course of Construction at the close of 1922. (*From Architect's Drawing.*)

centuated both as to size (50x120) and by beauty of decoration, so that it is one of the finest reading rooms of any College in our country.

Two buildings are now being erected at a cost of approximately $300,000.00, for the Theological Seminary, one constituting the main building,

Denkmann Memorial Library

the other the Seminary dormitory. Plans are maturing for the procuring of funds and for the erection of additional buildings, greatly needed for the right development of the College.

The present grounds cover an area of about 36 acres. The buildings (of which there are eight), and the grounds represent a value of $494,000.00. The Endowment and Trust Funds amount to $656,991.16, making the total value of the institution above a million dollars.

When President Wilson in 1917 called for volunteers, so great a number of Augustana students, including the whole band, enlisted, that this institution, according to the records at Washington, stood first on the list of American colleges as to the number of students enlisted in proportion to the attendance.

The roster of the 1921 catalog shows that twenty-six states of the Union and two foreign countries (Canada and Sweden) sent pupils to Augustana. The graduates of the college department now number 850; from the Theological Seminary one thousand young men have gone forth to serve the church in the ministry. In all, about ten thousand students have been wards of Augustana College during the sixty-two years of its existence; these former students are now found in all departments of American activity, in the halls of Congress, on the judge's bench, in the ministry, in law, in business, on the farm, and in foreign parts.

The fall term begins during the first week in September; the spring term in the second week of January. Further information is furnished by the President, Dr. Gustav Andreen, Augustana College, Rock Island, Ill.

The McCarthy Improvement Company

The history of street paving in the middle west might be written in the life story of P. F. McCarthy, president of the McCarthy Improvement Company, of Davenport. Mr. McCarthy started his active career as water boy with Edwards & Walsh, thirty-odd years ago. That firm laid most of the first paving placed in the main streets of the Tri-Cities.

In those days brick was exclusively used, and it wasn't very good brick, either, according to modern standards. It would not have long stood up under present day traffic. Vitrified paving blocks were then unknown and concrete foundations had not come into vogue. The foundation was of stone, broken by hand on the ground. On this was placed a sand cushion, and then sometimes only one, but usually two, courses of brick. The lower course was laid flat, and culls were considered good enough for this layer.

The first concrete base was made with hydraulic cement and mixed with shovels. Then came mixing machinery, crude, but much more economical than hand methods. That was the era of the wheelbarrow, which was used to feed the mixer and distribute the concrete. Always there was an incline up which the material was pushed to be dumped into the hopper. Now there is scarcely a wheelbarrow in use on any paving job. Hand labor is reduced to a minimum.

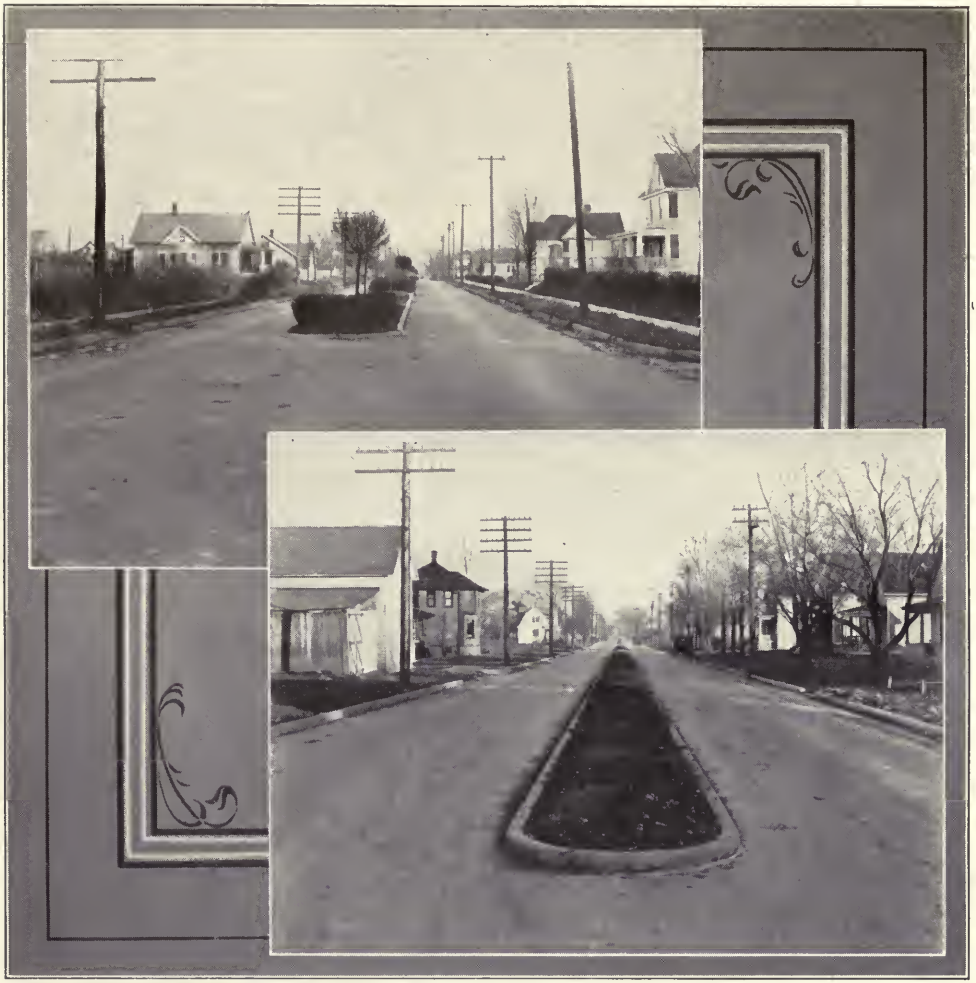
Introduction of the motor truck has revolutionized the paving business. Materials are assembled at central points and conveyed to the scene of operations as they are needed. In the case of concrete, the ingredients are elevated by machinery and dumped into trucks, which carry them to the mixers on the scene of operations. Sometimes mixing is done at central plants, where supplies may be prepared for several jobs in progress at the same time. This plan has been successfully followed by the McCarthy Improvement Company when the haul was as great as seven miles.

Use of machinery has greatly speeded up street improvement. It has also facilitated the standardization of mixtures, insuring uniform work of a much better quality than it was possible to turn out by the old hand methods. Materials can be more accurately measured or weighed. Inspection is made more efficient and formulas are more closely followed. Paving may cost more per yard than it did a decade or more ago, but it is vastly better. If it were not it would quickly break down under heavy motor traffic.

Mr. McCarthy worked up through the paving business to the top. From water boy he advanced to stone cutter, shaping the stone curbing in use in the early days. Then he became foreman, later superintendent, and finally organized a company of his own. The McCarthy Improvement Company was incorporated in 1903, in Iowa, and three years later took out a charter in Illinois. It is now one of the largest paving concerns in the west. It pays most attention to city work, its field being Iowa and Illinois, but it also does highway construction. Ten years ago it laid some of the first concrete paving on a country road in Rock Island county. This stretch

Above—P. F. McCarthy, President. Below—T. J. O'Brien, Vice-President and General Manager.

of highway, which is near Joslin, is still in perfect condition. More recent work of this kind was the brick paving on the Brady street road north of Davenport. The company never has been called upon to relay paving because of faulty work.



Two Views of First Completed Boulevard Link connecting Rock Island and Moline, and Built by the McCarthy Improvement Company. Above—Looking East on Nineteenth Avenue from First Street, Moline. Below—Looking East on Eighteenth Avenue from Thirtieth Street, Rock Island.

The first asphalt paving put down by the company was laid on Main street, Davenport, north of Locust, in 1904, and is still in use with little deterioration. Much of its later work has been of this material. It uses mostly Mexican asphalt, refined at Baton Rouge, La. Weighing of all materials and the system of mixing and treating insure absolute uniformity and long life in pavements laid by this company.

The McCarthy Improvement Company employs about five hundred men during the active season. Its work is directed by a skilled staff, most of whom have grown up with the concern. It maintains a large amount of equipment. Headquarters and general offices are in Davenport. The officers are: President, P. F. McCarthy; Vice-Presidents, T. J. Walsh and T. J. O'Brien; Secretary, William Wafer; Treasurer, D. R. Lane.

The Rock Island Telephone System

When the United States Government established an Arsenal in Rock Island at the time of the Civil War, the telephone had not been invented. It is doubtful if at that time even a few persons so much as dreamed of having their voices carried by wire. Now the telephone is intricately woven into all of Rock Island's business and social activities.

In 1876, Alexander Graham Bell made the discovery upon which the present art of telephone communication is founded. Less than two years later conversation by wire was possible in Rock Island. It was not until January, 1880, that regular service was offered the public, and this was through a small switchboard in Davenport.

Rock Island Telephone Exchange.

There was only a handful of subscribers in the early years and their number increased slowly. Later, however, an exchange was established in rented quarters in Rock Island. In 1901, the telephone company completed its own building on Nineteenth street. Here was a switchboard with places for ten girls to handle local calls and two for tolls.

In 1914, when the Nineteenth street building was nearly outgrown, construction of the present telephone building was begun at 635 Eighteenth street. On January 18, 1915, the change from the old board to the new was made.

There are now fifty-five per cent more telephones in Rock Island than there were ten years ago. In that time the population of the city increased thirty-seven per cent. Service is given through a switchboard with thirty positions for girls handling local calls and ten positions for toll traffic.

Rock Island now has in use more than 6,300 telephones, of which seventy per cent are residence stations. There is a force of more than 100 employees

Interior, Showing Switchboard in Operation.

operating, repairing and extending the equipment so that better and increased service may be given.

Telephone men and women of Rock Island are a part of the great army of 225,000 Bell System employees, all striving for the same purpose—the rendering of better and increased service.

The telephone plant in Rock Island is part of the Bell System facilities that makes it possible for you to talk to persons in 70,000 other places in the United States, Canada and Cuba.

Citizens of Rock Island, employees and others, are numbered with the more than 200,000 shareholders of the Bell System. They are the owners who have invested their savings to provide a nation-wide telephone system,

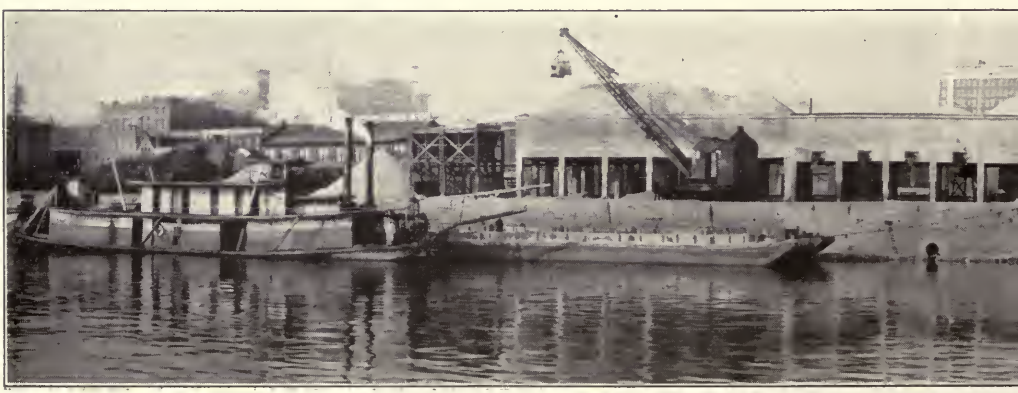
The Builders Sand and Gravel Co.

First in its line of business in the Tri-City field, the Builders Sand & Gravel Company, of Davenport, enjoys the distinction of having furnished building material to Rock Island Arsenal from the time that construction was started, back in 1863. It has been privileged to transact business with the War Department under every Commandant from Maj. Kingsbury to Col. King. Its first contract was for supplies used in the old storehouse containing the clock tower. It contributed to the erection of the original shops and did its part in furthering the great construction program undertaken during the World War.

Hans Goos, Founder of The Builders Sand and Gravel Company.

Origin of the company dates back seventy years to the time when its founder, Hans Goos, father of the present manager, began operations. His first equipment consisted of a small flatboat propelled with pike poles. Sand was loaded from nearby bars and islands by means of wheelbarrows. The first improvement consisted of long-handled shovels, flatiron-shaped and perforated to permit the water to escape. With these sand was scooped up from the bottom of the stream and a better grade was obtained with less effort.

About this time the pike-pole method of propulsion was discarded in favor of a sail, enabling the craft to make longer trips, going as far down stream as Muscatine and as far up as Hampton. To pilot such a sailing boat over the Rock Island rapids was considered quite a feat.



Davenport River Front, Showing Loading Bins and Pa

Hand and wind power gave way to steam about 1880, when the company fitted out a steam elevator dredge for loading sand and gravel and secured a small sidewheel steamer for towing barges to Rock Island Arsenal and other points. Unloading continued to be done by hand from docks along the levee until comparatively recent years.

In 1891 the present company was incorporated. The same year was marked by the introduction of a modern centrifugal, commonly called suction, pump for loading sand and gravel, and a larger and more powerful sternwheel steamer to replace the sidewheeler.

Hans Goos, Son of Founder of the Company, and Present Manager.

The present method of handling, as developed by the Builders Sand & Gravel Company, consists of loading barges by large centrifugal pumps, or, if the material is crushed rock, by gravity from bins at the quarry. These are then towed to Davenport by sternwheel steamboats, of which there are two in service. Unloading is done by a powerful crane and derrick boat, or a locomotive crane, into reinforced concrete bins. From these the material is dropped into trucks and wagons. In this operation crushed rock, sand and gravel may be accurately measured in desired proportions ready to be dumped into concrete mixers on the job. Thus all hand labor from the sandbar to the mixer is eliminated.

The Builders Sand & Gravel Company enjoys a most advantageous location. Its bins for the handling of sand, gravel and stone are on the river bank directly opposite the west end of Rock Island Arsenal. It has a 500-

ng Equipment of The Builders Sand and Gravel Company.

foot frontage there under 25-year lease from the Davenport Levee Commission. It did the levee improvement work at this point, with the exception of building the sea wall, and paved the driveway with concrete. A railroad track runs the full length of the property.

Warehouses and yards for the handling of building material and fuel are located at First and Gaines streets, at the edge of the business district of the city. Here there are 800 feet of private railroad tracks.

The company's first steamboat was named Lone Star. The larger of the two present craft is the Lone Star III. The other is the Lone Deer. There is also a derrick boat, a large fleet of barges, and a 30-ton railroad crane.

Almost unlimited quantities of sand, gravel and rock are at hand. Sand of best quality is brought from a dozen miles downstream and rock is obtained from the Buffalo and Linwood quarries. The company has its own gravel pit thirty miles upstream. As much as 1,000 yards or 1,500 tons of these materials has been unloaded and retailed in a single day.

The Davenport Water Company

Davenport has a safe and adequate water supply, furnished by the Davenport Water Company, drawn from the channel of the Mississippi river and purified by the most approved processes. In neither quantity nor quality has this concern failed to meet the increasingly exacting requirements laid upon municipal water plants during the last generation.

After several efforts to provide a city-owned water system had failed, Davenport, in 1873, granted a franchise to the present company, which was founded by the late Michael Donahue and associates. From the beginning satisfactory service, rather than large profits, has been the concern's main objective. Continuity of management has been a factor in attaining this end, a number of those holding places of responsibility with the company having served it for many years.

Growing needs of the city have been provided for and maximum fire protection afforded by the installation of over-size mains and ample reserve machinery. Average pressure maintained is exceptionally high. The company has met every emergency that has arisen in the half century of its existence. It now has 120 miles of distribution mains, two pumping stations, large sedimentation basins and a reservoir, which, being located on the bluff, offers the advantage of gravity pressure in the business district.

The Davenport Water Company was one of the first to install filters for the purification of Mississippi river water. It operates under a 25-year franchise, which was renewed in 1914. The present officers are: President, Thomas W. Griggs; Vice-President, Thomas J. Walsh; Secretary and Treasurer, James P. Donahue; Gen. Manager, C. R. Henderson.

The Borg & Beck Company

Back of the smoke and smudge and clatter, the stress and toil and grind of the average industrial enterprise lies an element of chance—a business romance—that keeps the game ever new for those who direct its movements.

The play of forces in the fairy tales of our childhood, in which suspense gradually grows till the climax in which the prince and the princess are married and "live happily ever after" is reached, has its counterpart in the dreams of many a plain matter-of-fact individual whose earthly all is tied up in some grimy manufacturing enterprise. The difference is that

The Moline Plant

in the manufacturer's dream the prince is an ideal product, guiltless of mechanical fault or flaw, whose principality is protected from invasion by iron-bound patents, the princess is the universal market that no rival has yet wooed, and the dreamer is the good fairy who brings the two together and shares with them the happiness that ever afterward prevails.

Records of the bankruptcy courts unfortunately prove that by far the larger part of the dreams of manufacturers fail to come true. Those of Charles W. Borg and Marshall Beck, however, were an exception to the rule. The manner in which their early hopes and expectations have been realized is a story of unusual interest. In the automobile clutch which their company perfected they have an ideal device for which there is an almost universal demand. It is regular equipment with three-fourths of all automobiles of standard design made in this country.

In 1903 Charles W. Borg was a member of the designing and experimenting staff of the Deere & Mansur Company, Moline. Wooden parts

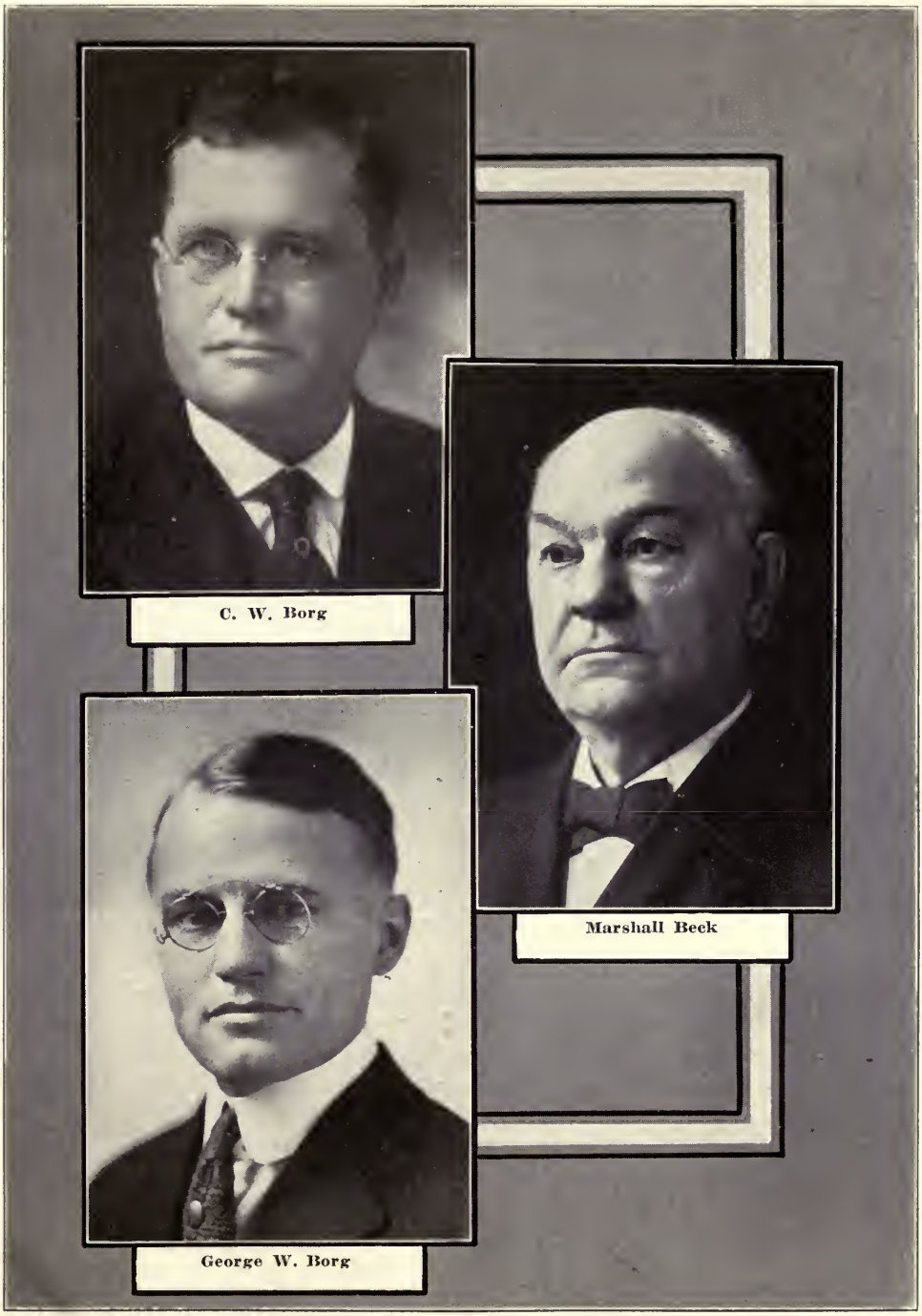
of implements and wagons at that time were mostly made by hand or with machinery, the operation of which was comparatively slow and expensive and often dangerous. Mr. Borg devised a shaping planer, a wood-working device which by means of a succession of cam-controlled cutting heads, turned out at a single run finished parts with tapers, swells, bevels, rounds, and other irregularities of form. Its use greatly simplified the making of wagons, to which it was first applied, speeding up the process and reducing the number of operations.

Realizing that he had hit upon something of unusual value, Mr. Borg resigned and prepared to manufacture his machines. At first he made his own drawings and patterns and did his own machine work. Later he applied the shaping planer principle to machinery for cutting wooden parts used in other lines of manufacture, such as barrels, washing machine tubs, porch columns and ice cream containers. The greater part of wood products of this nature now made in the United States and Canada are shaped by Borg machines embodying the original principle. Mr. Borg also devised a wheel felloe shaping machine, automatic rim sander, automatic column lathe, automatic column cap and base shaper, automatic trim and crozing saw, plow share jointer and landside trimmer, all of which were later made and sold by his company.

The co-partnership of Borg & Beck was formed in 1904, when Marshall Beck came into the firm to take up the office end of the enterprise. Shop space was rented in East Moline. Late in 1909 the concern secured quarters of its own at Third avenue and Sixth street, Moline, which are still occupied, though many additions to them have been made. Incorporation under the same name took place in 1913, with Charles W. Borg president, George W. Borg secretary, and Marshall Beck treasurer.

George W. Borg, son of the founder of the firm, entered the industry in 1903 and soon rose to a place of responsibility. His early training for the work was obtained mostly in his father's shops, although he supplemented his factory experience with some technical instruction in college. While still in his teens he was spending most of his vacations and other spare time familiarizing himself with the fundamentals of machine design and construction. At 22 he gave up school and devoted his entire time to the industry. Like his father, he has a natural aptitude for mechanics and takes enthusiastic interest in his work. He has designed, or helped to perfect, many of the devices manufactured by his firm. He is gifted with rare foresight and judgment in estimating mechanical possibilities involved in manufacturing processes. On top of that he has demonstrated unusual executive capacity. For the last decade he has been in active charge, relieving his father of most of his responsibilities, and latterly making his headquarters at the main plant in Chicago.

For the first few years Borg & Beck grew rapidly. The early dreams of the founders seemed realized. They had a product which defied competition, the demand was heavy and profits satisfactory. But it gradually became



apparent that the field was limited. Once a factory was equipped with their machines, its needs in that respect were met for many years. Replacement orders were neglible. By 1912 ninety percent of the prospective users in the

United States and Canada had installed Borg & Beck equipment. The field had played out. It looked as if there were no more worlds to conquer.

The company, however, did not mean to give up without a struggle. When orders for its regular product fell off, instead of laying off men and reducing activities, other work was sought. Machining contracts that could be executed without radical shop changes were undertaken.

Among the orders received was one from the Velie Motor Vehicle Company for a number of single dry-plate clutches which embodied features then new in the automotive industry. Up to that time most clutches used had been of either the cone or the multiple disc type. Borg & Beck soon saw that the new clutch offered many advantages. License from the inventor to manufacture it was secured, and an intensive effort to perfect certain details that previously had militated against the complete success of the device was undertaken. In this work Gustave C. Nelson, Mr. Borg's first employe, who had helped make the original wood cutting machines and who had become shop superintendent, rendered invaluable aid.

In a short time all the essential features of the present friction clutch for power transmission, which has carried the name of Borg & Beck all over the civilized world, had been perfected. Strongly protected by its own patents, the company turned its main attention to the making of clutches. At last it had realized the manufacturer's ideal, an exclusive product and a demand that was rapidly becoming universal.

Use of the Borg & Beck clutch is not confined to automobiles. It is equally successful in trucks, tractors, tanks and motor boats. It "picks up" the power load smoothly and efficiently. Automotive engineers generally recognize the Borg & Beck clutch as ideal, because of its dependability, effectiveness, ease of adjustment and low cost.

Expansion of its business after the perfection of the clutch made it necessary for Borg & Beck to expand its quarters. Five additions to the original plant in Moline were made in rapid succession. Then in 1918, because of a local labor shortage incident to the war, it was found expedient to open a branch in Galesburg, Ill., employing fifty men. Late the same year the factory of the Smith Form-a-Truck Company at Clearing, in the southwestern limits of Chicago, was bought at bankrupt's sale. The plant was new and modern and well adapted to the needs of the new owners. It had 118,000 feet of floor space, giving room for the employment of 1,000 to 1,200 operatives. The Chicago Belt Line railroad gave first-class shipping facilities and there was a 1,000-foot covered loading platform and as many feet of new private service track. The Clearing factory was opened early in 1919 and was conducted as a branch till early in 1922, when headquarters were removed there from Moline. The Galesburg branch was discontinued when the one at Clearing was opened.

During the World War Borg & Beck worked almost exclusively on parts for manufacturing concerns having government contracts.

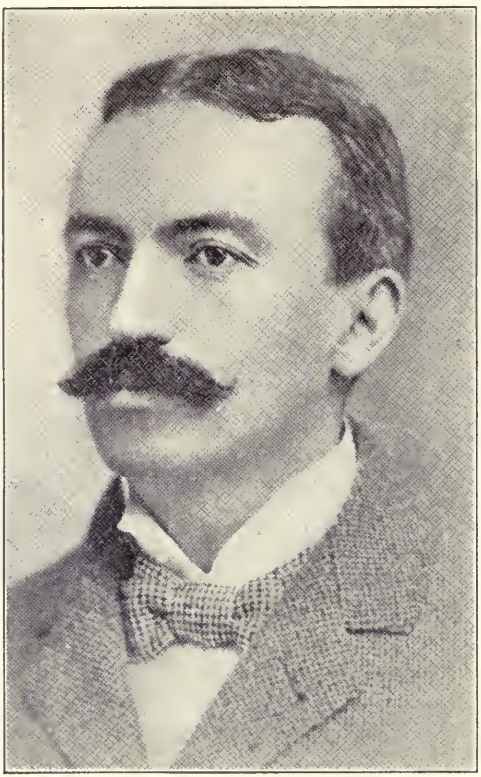
Leading Newspaper In Western Illinois

The Moline Dispatch was established as a daily in 1878, after a number of weekly newspapers had lived brief existences. In the first seven years of the life of the Dispatch it had its own vicissitudes and many changes of ownership. Commencing in 1885, when Messrs. P. S. McGlynn and J. K. Groom became owners, the Dispatch began a growth commensurate with or a little more rapid than that of the city. It moved into and occupied its present home in October, 1922.

From 1885 to 1922 the ownership of the Dispatch underwent only two changes—in 1891, when Mr. Groom sold his half interest to W. F. Eastman; and in 1911, two years after the death of Mr. Eastman, when John Sundine purchased the Eastman half interest.

The Rock Island Argus

Survival of the fittest, is the hard law that has shaped the destinies of the daily press of the country. The Rock Island Argus stands today a typical product of newspaper evolution during the last seventy years. It has fought and won the long battle in which its competitors, one by one, failed and passed into history, building up a record of real service and dependability seldom rivaled and not anywhere excelled in newspaperdom.



John W. Potter, Owner and Publisher of The Argus from 1881 until his death in 1898

There have been many changes of ownership, of location, of form of publication. Even the name has been altered. Originally it was The Rock Island Republican.

Fred S. Nichols and John W. Dunham printed the first issue of the Weekly Republican, October 18, 1851. Dunham tired of the venture in six weeks and sold out to his partner. The latter held on till 1853, when J. B. Danforth, who had acquired an interest a year earlier, became the sole owner. Robert V. Shurley became a partner in 1856. September 16, 1857, Pershing & Connelly, publishers of the Rock Islander, bought Mr. Danforth out, and changed the name to The Rock Islander and Argus. About the same time, Mr. Shurley disposed of his holdings to Milton Jones, who held an editorial position with the paper till 1881.

Mr. Danforth took over the interests of Pershing & Connelly in 1859, and the name once more became The Argus. Danforth's connection with the newspaper finally terminated in 1869, when he sold to Robert F. McNeal. McNeal survived less than a year, selling to J. S. Drake. In 1873 The Argus Company was incorporated. Richardson & Powers obtained control in 1881, but a few months later publication was suspended. At this juncture, J. W. Potter, publisher of the Freeport Bulletin, bought the dilapidated plant and placed his son, John W. Potter, Jr., in charge. That was the last change in ownership, and marked the beginning of a period of upbuilding that has continued to the present.

The first daily was printed July 13, 1854. July 18, 1859, the daily was changed to a tri-weekly, but Sept. 1, 1861, returned permanently to the daily field. In the beginning the daily was published in the afternoon. From Dec. 17, 1855, to Nov. 18, 1861, it appeared in the morning. On the latter date evening publication was resumed. A weekly was printed, in addition to the daily, till about twenty years ago.

First publication took place in the Whittaker & Everts building, just east of the present Argus home. Quarters were found in the Buford block, at the Northeast corner of Second avenue and Seventeenth street, in 1854. In 1871 the Buford heirs erected a building for the exclusive use of The Argus just north of the original block. Here the newspaper remained till 1888, when Mr. Potter purchased the present quarters, which have been remodeled several times since to give added facilities.

Mr. Potter died in 1898. The J. W. Potter Company was then organized, Mrs. Potter assuming the presidency of the corporation, which position she still holds. J. F. LaVelle became business manager and H. P. Simpson editor. Upon Mr. LaVelle's death in 1908, he was succeeded by F. J. Mueller.

During the years of marked transition in the methods of newspaper publishing The Argus kept pace with its contemporaries and rapidly grew from a small, eight-page paper to a large modern daily. The Argus acquired the first Associated Press report and leased wire service in Rock Island, and its mechanical equipment has been steadily increased and improved.

In 1919 John W. Potter, third in a direct line to bear that name and follow the vocation of newspaperman, entered the business and the paper is now actively conducted by him as publisher, his brother, Ben H. Potter, Mr. Mueller and J. M. Colligan, managing editor. The directors of the J. W. Potter Company are Mrs. J. W. Potter, John W. Potter, Ben H. Potter, Marguerite F. Potter, F. J. Mueller and H. P. Simpson.

The Rock Island Daily Union, the last of its competitors in the Rock Island field, was absorbed by purchase in March, 1920, and at that time The Argus, which always had been conducted as a Democratic paper, became independent in politics.

A year later, in 1921, a new building site at the southwest corner of Eighteenth street and Fourth avenue was purchased by the company and plans for a spacious, modern plant to be erected on this lot are being drawn. The structure will be one of the finest newspaper homes in the middle west and will be modeled so as to accommodate the rapidly growing advertising and circulation business of The Argus.

The Daily Times

There is but one daily newspaper covering Davenport, Rock Island, Moline and their suburbs and giving a complete local daily news service, with delivery by carrier throughout the Tri-City field. That is the Daily Times, published in Davenport. It has been a Tri-City newspaper for over twenty years, exerting a powerful influence for community co-operation.

The Times was established as a Davenport newspaper in 1886. E. W. Brady was its founder. In June, 1899, A. W. Lee and C. D. Reimers, of the Ottumwa Courier, purchased the Times, which, with the Courier, became the nucleus of the present Lee Syndicate, composed of six daily newspapers.

Under the new owners the Times grew rapidly. Offices were opened in Rock Island and Moline and news and carrier service were extended to the Illinois side of the river. The Daily Times was the first in its field to adopt modern mechanical equipment.

In 1901 E. P. Adler, the present publisher and president of the Lee Syndicate, was made manager of the Daily Times, and Messrs. Lee and Adler purchased Mr. Reimers' interest in the enterprise.

The Times was first printed in a small plant on Front street. After a few years it took up quarters on Brady between Second and Third streets. September 5, 1911, it occupied its present home on East Second street, conceded to be one of the finest newspaper establishments outside of the metropolitan centers. Its Goss high speed sextuple press has a capacity of 72,000 twelve-page papers per hour.

The circulation of the Daily Times has grown from 1,800 to 24,000.

The Davenport Democrat—Iowa's Leading Newspaper

When the Democrat Publishing Company, headed by Frank D. Throop, purchased the Davenport Democrat in the autumn of 1915 the paper looked back across 60 years of continuous publication under practically unchanged ownership.

Frank D. Throop, Publisher

The first issue of the Iowa State Democrat appeared October 15, 1855, and October 22, 1905, the Democrat observed the 50th anniversary of the paper by the publication of the Democrat's half-century edition—a feat of journalistic enterprise which gave to its readers nearly 100 pages of historical and reminiscent reading that made the edition unique in the field of journalism.

D. N. Richardson, the long-time editor of The Democrat, left his scholarly and dignified impress on its pages and made it one of the leading newspapers of the west. In his later years he won distinction as a traveler and author.

J. J. Richardson, who survived his brother, remained the principal owner of the paper until 1915, when it was purchased by The Democrat Publishing Company, of which J. B. Richardson is president and Frank D. Throop secretary and treasurer. In 1922 the company purchased the property at 407, 409, 411 and 413 Brady street, where it planned to erect a magnificent $250,000 plant, one of the finest in the middle west.

The paper has played a large part in the history of Davenport from its very beginning. Launched as a Democratic daily by Richardson, Hildreth and West, in 1848, the Richardson ownership survived several changes in the firm, and in 1863, the Richardson Bros. bought out the other interests and remained the publishers of the paper for over half a century. D. N. Richardson remained editor of the paper for 43 years. He passed to his reward July 4, 1898. In 1887 The Democrat bought out the Davenport Gazette, and seven years later absorbed another Davenport daily, the Leader, and the name was added as a sub-title to the paper.

Frank D. Throop, present publisher of The Democrat, had been for 14 years connected with the Muscatine Journal, and for the last nine years its publisher, when he came to Davenport and organized the company which purchased the Democrat from the Richardson interests. He is the third generation of newspaper publishers in his family, his grandfather having conducted a newspaper, beginning in 1868. Since the change in ownership The Democrat has continued to expand in size and influence, and it is to be reckoned one of the leading independent-Democratic newspapers of the middle west.

The Linograph Company

The Linograph Company
Davenport, Iowa

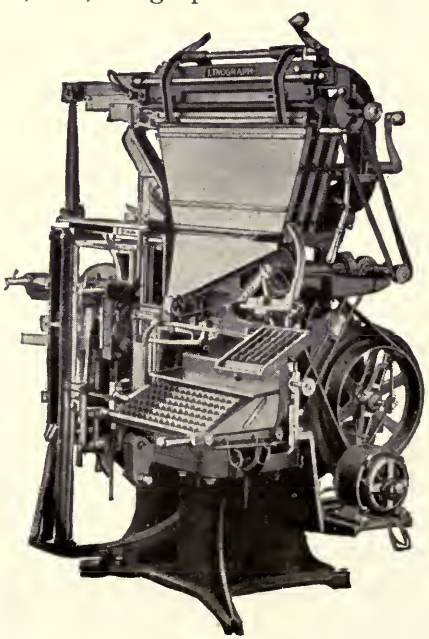
The Linograph Company of Davenport, Iowa, manufactures the Linograph, which is a typesetting machine used in job printing and newspaper offices. When this enterprise started, in 1912, there were many who claimed such fine machinery as a typesetting machine could not be successfully manufactured out here "Where the West Begins." The success of the Linograph has definitely proven that skilled mechanics for the highest grade of work can be secured in Davenport.

The enterprise was brought here from Minneapolis, Minn., through the efforts of a group of the leading business men, acting under suggestions from the Davenport Chamber of Commerce, then known as The Greater Davenport Committee, and a large number of Davenport people became interested as stockholders.

Since then the Linograph has been developed and perfected, and new models have been put on the market which have reached a high point of efficiency. This is an international business, for Linographs have been sold in twenty-two foreign countries and nearly all the states, and are making friends everywhere.

The Linograph Company is essentially a local enterprise, backed by Davenport capitalists and hundreds of people in the city and vicinity. The men who direct the destiny of and are responsible for the success of this enterprise are: R. R. Englehart, J. W. Bettendorf, Chas. Shuler, J. W. Bollinger, Ray Nyemaster, H. C. Kahl and H. Petersen.

The officers and active management consists of: R. R. Englehart, president; Hans Petersen, Vice-President and General Manager; Ray Nyemaster, Treasurer; J. C. Pedersen, Secretary and P. O. Pedersen, Sales Manager.



The Linograph

Rock Island Bridge and Iron Works

Facilities for the fabrication and erection of steel parts offered by the Rock Island Bridge and Iron Works makes possible greater speed in the construction of modern buildings in the Tri-Cities and immediate vicinity. This company is equipped to design, fabricate and erect anything in structural steel and iron. Its plant, occupying six acres of ground on the river bank in the west end of Rock Island, has exceptionally good shipping facilities both by rail and water. It regularly employs one hundred men.

W. A. Rosenfield, President

Practically all the steel used in buildings erected at Rock Island Arsenal during and immediately following the war was furnished by the Bridge and Iron Works, which also erected there an elevated steel water tank of 500,000 gallons capacity. The main activities of the plant at that time, however, were devoted to the fabrication of materials used in the construction of the 5,000-ton merchant ships by the Submarine Boat Corporation for the Emergency Fleet Corporation. The steel was shipped direct from the mills to Rock Island, fabricated there and re-shipped to Newark, N. J., where the ships were built and launched. Great quantities of material were handled in this manner.

In peace time most of the work done by the company has consisted in the preparation and erection of structural steel for building purposes. It is advantageously located for the construction of steel barges, of which it has made several, and in the event of the revival of river traffic it will be in position to make a strong bid for work of this kind.

The Rock Island Bridge and Iron Works was incorporated in 1912 with $100,000 capital. The officers are:

President—Walter A. Rosenfield.

Vice-President—Walter G. Murphy.

Secretary and General Manager—Edward Manhard.

National Construction Company

It takes hard work, straight thinking, close figuring and lots of nerve to win success in the construction game. That isn't all it takes, but the qualities enumerated as essential will make it clear that unless one is possessed of more positive virtues than are commonly found combined in one individual be had better turn his hand to other things.

D. E. Keeler, of Davenport, has followed the business for thirty-five years. Working under his father, the late Dan Keeler, just thirty-five years ago he laid the first pavement in this part of the country. It was of two-course brick, on sand cushion, and extended from Perry to Ripley on Third street in Davenport.

With Mr. Keeler for the last twenty years has been associated J. W. Crowley, of the same city, first in the Peoples Construction Company, later in the D. Keeler Company and finally in the National Construction Company, organized in 1919.

Heavy bridge building is the specialty of the last named concern, but it also does all kinds of railroad work, installs water and sewer systems, paves streets and builds and improves highways. One of the big projects put through by one of the earlier organizations was the celebrated Belle Fourche irrigation system in the Black Hills of South Dakota. This undertaking involved the erection of a huge dam, creating a reservoir of 9,000 acres and supplying water enough to reclaim 240,000 acres of land.

Other work done by the companies in which Messrs. Keeler and Crowley had been the moving spirits includes the building of all the bridges between Chicago and Terre Haute for the Chicago, Terre Haute & Southeastern, better known as the John R. Walsh road; building of the cut-off for the C. B. & Q. between Old Monroe and Mexico City, Mo.; the Big Lane cut-off of the Union Pacific out of Omaha, and all the bridging on the B. & M. from Lincoln to Milford, Neb. A sewer system costing a quarter of a million dollars was built at Clinton, Iowa, in 1911, and paving and sewer work done in the Tri-Cities before and since has run into large figures. One of the big Tri-City jobs was a storm drain and sewer system in East Moline, completed recently at a cost of a quarter of a million dollars. Among other late undertakings was one at Fort Madison, Iowa, which cost half a million and involved engineering difficulties, the solving of which has attracted considerable attention among construction engineers. Since the forming of the present company, work done has amounted to more than two millions of dollars, and at the close of the 1922 season contracts totaling a quarter of a million more were in hand. During the World War sewers were laid for 170 government-built houses, construction of which was started in Davenport.

Mr. Crowley, before becoming associated with Mr. Keeler, was superintendent of construction for the Davenport, Rock Island & Northwestern Railroad Company, having charge of the building of the Crescent bridge and of the terminals and connecting lines in and adjacent to the Tri-Cities. In

1914 he became Commissioner of Public Works for the city of Davenport, serving one term of five years and then resigning to return to the construction game.

The National Construction Company has its main office in Davenport, with branch offices wherever large undertakings are in progress. The con-

Showing Progressive Stages of Big Davenport Sewer, Built by the National Construction Company

siderable business done in the Tri-Cities and in nearby cities and villages is handled direct from headquarters. Officers of the company are:

President—D. E. Keeler.
Vice-President—R. J. Walsh.
Secretary and Manager—J. W. Crowley.
Treasurer—J. F. Schroeder.
Assistant Secretary and Treasurer—Everett J. Thompson.
Directors—Messrs. Keeler, Walsh, Crowley, Schroeder and A. J. Klindt.

The Geo. Sheldon Company

The Geo. Sheldon Company is one of the younger construction concerns of Davenport, but one which already has won a reputation in the field of highway and bridge building. In three seasons it has built more than one hundred bridges and laid ten miles of concrete paving.

Originally capitalized at $25,000, the company has authorized an increase to $150,000. The value of its equipment is conservatively estimated at $95,000. With experienced and aggressive leadership and ample means, it seems destined to play an increasingly prominent part in the extensive

Concrete Highway Bridges Built by The Geo. Sheldon Company

program of highway improvement upon which the middle west is now entering, as well as to do construction work along other lines, which it is fully qualified to undertake.

The Geo. Sheldon Company was incorporated in 1920. Its president, for whom it was named, had had sixteen years' experience in the general construction business. He had built bridges and concrete buildings, laid paving and done other work, thereby obtaining a practical knowledge of the business. He saw that the field was one of large possibilities, but calling for an effective organization and a considerable capital investment to be successfully worked. Therefore he set about enlisting the aid of other prominent men in the community. Since he was a native of Davenport and well and favorably known, it was not difficult for him to secure the required co-operation. The vice-president of the company is Fred O. Block, president of the G. W. Block Company, extensive dealers in coal and building material, with twelve branches in various cities. The secretary is Gustav Stueben, cashier of the Scott County Savings Bank. The Treasurer, G. H. Ficke, is in the insurance and real estate business in Davenport.

In its first season the company undertook a large highway bridge construction program for Scott County, Iowa, putting in sixty-six of these structures. In 1921, thirty-seven bridges for Scott county and five large bridges for the state of Illinois were constructed. Operations for the 1922 season were confined entirely to highway paving, ten miles of concrete road-

way being laid for the state of Missouri. This was a $500,000 contract, and the work was highly commended by highway authorities from different states who inspected it both while it was being built and after completion.

Exacting requirements of present-day highway and bridge construction make it necessary to use only the best equipment obtainable and calls for a degree of executive and engineering skill unknown in such work a few

Some of Missouri's Best Roads are the Work of The Geo. Sheldon Company

years ago. In every department the Geo. Sheldon Company has made good. Its equipment includes two complete paving units, five bridge building outfits and camps of modern type for each.

The company's work has been of such character that it is being sought after by highway commissions, county and state, in Iowa and nearby states, to undertake new contracts. With its record of achievement and with highway and bridge construction programs of unprecedented extent in hand all over the country, the future of the concern seems assured.

The Tri-City Brick Company

The Tri-City Brick Company was organized in February, 1922, by Mr. J. L. Buckley, then located at Pittsburg, Pa.

Mr. Buckley organized the Tri-City Brick Company for the purpose of purchasing a plant that was owned and operated by the Argillo Works and located at Carbon Cliff, Ill. The majority of the stock in the company is owned by Tri-City residents, and the officers of the concern at the time of this writing are as follows:

President—F. K. Rhoads.

Vice-President—C. J. Mueller.

Secretary and General Manager—J. L. Buckley.

Treasurer—C. A. Beers.

The above officers, together with H. O. Binyon, of Chicago, and F. T. Myers, of Rock Island, constitute the board of directors.

This plant has a large acreage of excellent raw material, both shale and fire clay, and unexcelled shipping facilities, both by rail and water as well as by truck, as the plant is located directly on the Rock Island-Geneseo new paved road.

The Argillo Company, which is one of the oldest concerns in this section of the country, was devoting its efforts entirely to the manufacture of hollow ware, but immediately upon taking possession of the plant Mr. Buckley discontinued the manufacture of hollow ware and started manufacturing face brick, and in a short time very successfully developed one of the most artistic lines of facing brick that has ever been manufactured in the central west.

The plant was greatly improved and extended; new kilns were erected; an entire new set of brick machinery was installed, and before the end of the first year the production had been increased to 50,000 brick per day.

Carbon Cliff Plant o

Commodious offices were opened up shortly after the organization of the company, in suite 318, Robinson Building, in Rock Island, where an extensive line of its brick is displayed in large panels.

The Argillo works antedates all other concerns of its kind in the community. As early as 1856 the quality of the clay at Carbon Cliff attracted the attention of W. S. Thomas, who had some scientific knowledge of ceramics. At that time the coal mines there were at the height of production and the Rock Island road had just been completed, connecting the Mississippi river with the Great Lakes at Chicago, and giving exceptionally good shipping facilities. Mr. Thomas began by making pottery on a small scale, experimenting to learn the possibilities of his undertaking. Results were so satisfactory that in 1865 a company was organized by Mr. Thomas, together with A. L. Wait, of Carbon Cliff, and Jeremiah Chamberlain, of Rock Island. It was given the name Argillo Works, Argillo meaning white clay. An architect from abroad was engaged to build the first kiln. From that time till the present operation of the plant has been practically continuous, though the product has been changed from time to time to meet market demands.

Milo Lee became chief owner and president of the concern in 1869. He was succeeded in 1897 by W. T. Ball. In 1899 J. F. Robinson, Fred Titterington and F. K. Rhoads purchased the plant, with the 189 acres of land owned by the company, and operations were conducted under the management of Mr. Titterington until the organization of the Tri-City Brick Company.

Clay at Carbon Cliff is adapted to a wide variety of uses. An excellent grade of pottery was made from it in the early days. Crockery and jugs formed the staple output for a number of years. Even tableware was attempted, but the product was too dark in color to find favor. Good sewer pipe was turned out, but the kiln capacity was not large enough to produce this line successfully.

i-City Brick Company

The Sturtevant-Baker Company

Efficiency and cleanliness go hand in hand in the Sunlight plant, the new home of the Sturtevant-Baker Company, manufacturers of Purity ice cream and Crystal ice. Located at the corner of Sixteenth street and Fifth avenue, Rock Island, convenient for prompt delivery to all parts of the three cities, the building was planned primarily for the production of good ice cream. Working at full capacity, 240 gallons of ice cream can be produced hourly, while the daily output of ice is 100 tons.

In the ten years since its advent in Rock Island the Sturtevant-Baker Company has operated with marked success, building up a reputation for

New Home of The Sturtevant-Baker Company

Purity ice cream which extends throughout the three cities and surrounding territory. Twice it has outgrown its quarters, and finally was forced to construct the present building for its plant, the structure being started late in 1921 and occupied early in 1922.

The business later acquired by the present owners was started about twenty-five years ago by the late J. M. Beeman, at Seventh avenue and Fifteenth street. At first a milk depot was conducted, and later the Beeman Ice Cream Company was organized. In 1912 O. G. Sturtevant and C. E. Baker, both experienced in the business, purchased Mr. Beeman's interests and operated it as a partnership under the name of Sturtevant & Baker. The old quarters were inadequate for the needs of the new owners, and so a new building was erected just across the alley west of the former station. There the retailing of milk and cream was shortly discontinued and the firm came to devote its entire attention to the manufacture and sale of ice cream.

Details of the present plant were planned with much care and after an exhaustive investigation of the best features of similar structures throughout the country. The Sturtevant-Baker Company, which was incorporated when the expansion was undertaken, was fortunate in securing the site of

the old rink building, centrally located and with ground space of 100x212 feet. The building covers all the ground, part of it being two stories in height, and is of fireproof construction. In it all that is modern in the way of equipment for the manufacture of ice cream and pure ice has been installed. While the foundations were being laid an artesian well was drilled to supply pure water for the making of ice. The structure is of brick and concrete, presenting a pleasing exterior and an interior so admirably adapted to its purposes that it is likely to serve for a long time as a model for building activities of concerns engaged in the ice cream business.

Recognizing sunlight as an important factor in promoting sanitation, and light interior colors as an aid in the maintenance of perfect cleanliness, the builders provided an abundance of windows and skylights and finished the inside in pure white. Refrigerating machinery of the latest type fills the engine room, from which is piped vaporized ammonia to three separate departments. In one of these Crystal ice is produced, being frozen in brine reduced to a low temperature by the expansion of the piped ammonia. This ice, produced in 400-pound cakes, is handled by an electric crane. It is used to pack ice cream and supplied to ice cream dealers, and the surplus is sold at retail at the plant.

Four electrically operated freezers are in the ice cream department. They are cooled direct by the ammonia process. The "mix," composed of cream, sugar, flavoring extracts, etc., is prepared in three large containers on the second floor and fed through closed pipes down into the freezers. There the dashers are set at work in the cold cylinders and when tests show that the specific gravity has been reduced to the required point, the ice cream, still in a partly fluid state, is poured out into paper-lined cans ready to be placed in the zero chamber. Each of the four freezers converts fifteen gallons of "mix" into ice cream every fifteen minutes.

In the zero chamber, which is also cooled by direct action of the ammonia, a low temperature is maintained. There the ice cream is brought to the right consistency for handling. Before being delivered it is packed in crushed ice, which keeps it in perfect condition for several hours, even in the warmest weather.

Sturtevant-Baker delivery facilities are up to the high standard of the manufacturing plant. Anticipating the heavy demand for its product which has since been realized, the company planned a large loading dock, all under roof, from which the eight trucks serving the Tri-Cities receive their daily loads of ice and ice cream. An overhead mechanism carries the crushed ice direct from the crusher to the vehicles so that loading and packing can be done most expeditiously.

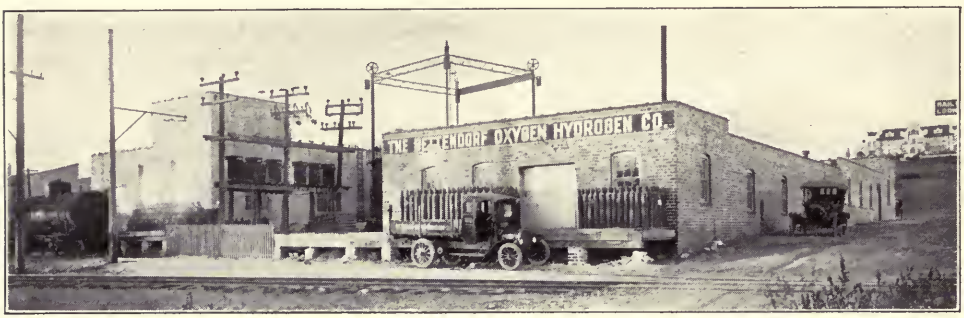
The Sturtevant-Baker Company invites inspection of its plant, confident that the more the public knows of its methods of operation the sooner will the truth of its claim for the purity and goodness of its product be realized

The Bettendorf Oxygen-Hydrogen Company

Oxygen and hydrogen, combined in the form of water, are among the most common elements. Separated they have long been employed in small quantities in various ways, but their general use in the industries dates back but a few years, and involves a story of surprising growth.

Oxygen is used mainly in welding and in cutting steel, expediting both operations to a marked degree and offering other improvements upon older methods. During the war hydrogen was required in large quantities to inflate balloons.

The business of generating oxygen and hydrogen in commercial quantities in this country goes back only a few years. In 1914, when the World War began, the number of plants in the United States was fifty-one, and the



quantity of oxygen produced annually was 104,700,000 cubic feet. Now there are about one hundred plants, with a capacity of 1,500,000,000 cubic feet yearly.

The Bettendorf Oxygen-Hydrogen Company began operations in August, 1914, with a capacity of one million cubic feet of oxygen yearly. Its plant is fitted to generate gases by the electrolysis of distilled water. A high voltage current is passed through the liquid in cells, setting the two elements free in the form of gases, which are conducted to separate holders and later compressed into steel cylinders for handling, at a pressure of 1,800 pounds per square inch. Present capacity of the plant is 7,000,000 cubic feet of oxygen and 14,000,000 cubic feet of hydrogen per annum.

Hydrogen is used principally in the hydrogenation of vegetable oils, a process which converts them into stearine, used in the manufacture of lard substitutes.

During the World War practically all the gases generated by the Bettendorf plant were used at Rock Island Arsenal and in Tri-City manufacturing concerns doing war work. A. J. Russell, secretary and manager of the company, was chairman of the war service committee of the oxygen-hydrogen industry.

E. J. Bettendorf is president of the company, T. J. Walsh vice-president, J. Reed Lane treasurer, and A. J. Russell secretary and manager.

The Knox Mortuary

More than a hundred years ago—June 27, 1818, to be exact—was born at Blanford, Mass., the founder of the Knox Mortuary in Rock Island. Charles Bishop Knox was his name. He learned the trade of cabinet maker, came to Rock Island in 1841 and opened a shop.

The Knox Mortuary

In the early days cabinet makers found plenty of work in the newer communities of the west. They built furniture and store fixtures. Coffin making was a side line. Such factories as there were then were far away, and transportation was expensive and slow. Generally work was done on order, and few goods were made up in advance to be held for sale.

Mr. Knox found a brisk demand for coffins and soon established a reputation as coffin maker that extended many miles beyond the village limits. There were no undertakers in the community then. Friends of bereaved families generally volunteered to officiate at burials, but even so, something better than a rough pine box nailed together by amateurs was demanded. Coffins were made to order, and not infrequently Mr. Knox was aroused during the night to prepare one needed forthwith at some distant point. Such experiences suggested to him the wisdom of making up coffins in advance in diffierent sizes, and keeping them ready for emergencies. This practical expedient, strange as it now seems, set the tongues of the townspeople to wagging. It was considered little short of sacrilegious to thus anticipate the visits of the Grim Reaper. The Knox cabinet shop then was in the basement of a one-story brick building at what is now 2010 Fourth avenue. The morbid curiosity of people who paused in the street to watch the coffin maker at work made it expedient for the owner of the shop to screen the windows.

The elder Knox conducted his first funeral, according to records now in the hands of the family, in 1852, and three years later he definitely embarked in the business of undertaking, being the first in this part of the country to do so. From that time till his death, in 1890, he was actively engaged in this work, returning to earth the remains of most of the older residents of Rock Island and vicinity.

During the Civil War nearly two thousand Confederate prisoners, who died mostly of contagious diseases, were buried on Rock Island, just east

1852—Four Generations of Knox Service—1922

Charles B. Knox—1818-1890
Founder of the Knox Mortuary

B. Frank Knox—1852-1914
In Whose Hands the Business Grew

Harry T. Knox
The Present Proprietor

Harry T. Knox, Jr.
Who is Expected to Carry on

of the Arsenal shops. As the only undertaker in the locality, Mr. Knox was called upon to inter them, also making the coffins. This he did, numbering the graves and keeping a record, still in the family possession, of names and all other available data.

Two sons of the elder Knox learned the undertaking business with him, one of them, B. Frank Knox, became associated with his father in 1872, and taking over the business upon the latter's death. The son had his first introduction to hard work as a boy, being employed in a bakery at night making bread for Confederate prisoners and in daytime helping his father bury the southern soldiers who had succumbed during the preceding 24 hours.

B. Frank Knox conducted the undertaking establishment until his death, Dec. 28, 1914, as the result of an injury in an automobile accident. Then the business passed into the hands of his son, Harry T. Knox, who now owns and manages it.

The three generations that have conducted the Knox mortuary establishment have witnessed remarkable changes. The village of the 40's, where the business was started, has grown to a city. The crudities of pioneer days have given way to the refinements of the twentieth century. The undertaking business has passed from its inception through the era of the slow and unpretentious horse-drawn hearse to the ornate and swift motor funeral car of today.

In all the changes in its business the Knox Mortuary has been among the pioneers. The late B. Frank Knox was one of the first licensed embalmers in Illinois. He was among the first to discontinue the use of ice and introduce embalming fluid. He adopted arterial embalming as soon as its success was demonstrated.

Long ago the original building used in the business was torn down and more commodious quarters provided. Fifteen years ago a mortuary chapel was added, and is now used exclusively for funeral services.

The Knox family always has taken a prominent part in political and social affairs. Charles B. Knox served as coroner, supervisor and alderman, and was one of the first captains of the volunteer fire department. B. Frank Knox was chief of the volunteer fire department in 1886 and 1887, later serving as alderman from the fifth ward and was mayor of Rock Island three terms, being elected in 1895, 1901 and 1903.

Harry T. Knox has learned the business from the ground up. Like his father, he grew up in it, has a natural aptitude for it, and is ever alert to learn and apply betterments in his line of work. During the World War he was in the aviation service, serving with the 612th Aerial Squadron, which trained at Kelly Field, San Antonio, Texas, and later had charge of aviation training work at the general supply depot at Fairfield, Ohio.

It is the fond hope of the present owner that the Knox Mortuary will sometime pass into the hands of the fourth generation of the family, Harry T. Knox, Jr., whose portrait accompanies this sketch.

Rock Island Register Company

Founded upon a sound, practical idea, builded with painstaking care and fidelity to correct business principles, the Rock Island Register Company in a dozen years has grown until it now stands practically without competition in the middle west in the manufacture of warm air registers.

"No Streak" is the Registered Trade Mark. Formerly the wall register used in warm air heating was objected to because of leakage of air, which carried dust up the wall and in time caused streaks. The idea of the founders of the Rock Island Register Company was a device to prevent this leakage,

a patented interlapping slip joint that made a tight connection, and forced all the warm air out into the room away from the wall. No competitor ever has been able to improve upon or even equal it.

The Rock Island Register Company is distinctly a Rock Island concern. J. J. Burgess and S. P. Burgess, brothers, and natives of the city, invented the register, and established the business in 1910. In 1911 they formed a corporation in which George Harms and W. G. Harms became interested. In 1915 they erected their first building, which was quickly outgrown and two additions were made. No more ground room being available, they built the present factory building at Fifth avenue and Twenty-fifth street. This building is three stories and basement, and has 32,000 feet of floor space. Forty men are employed.

From the beginning the company has maintained a high standard for its product. During the war it installed heating plants in 460 government-built houses in Rock Island, Moline and East Moline, and there never has been a complaint. It was the best work of its kind, government housing officials said, that was done anywhere in the United States.

Distribution of the Rock Island register is now national in scope.

The Rock Island Mfg. Company

In diversity of output the Rock Island Mfg. Company probably ranks among Tri-City manufacturing concerns next to Rock Island Arsenal. More than five hundred different articles are listed in its catalogues. Hardware, electrical and farm specialties are its chief products. Vises constitute the largest single item. From thirty to forty per cent of the vises used by the armies of the United States and its allies during the World War were made by this concern.

The history of the Rock Island Mfg. Company goes back scarcely a dozen years. In 1909 it was organized under the leadership of Carl E. Shields, who has served continuously since as president and treasurer. The assets of the former Rock Island Tool Company were purchased, and the plant at First street and Fifteenth avenue, Rock Island, was taken over. Vises had been the main product of the Tool Company, which employed thirty to forty men, and occupied twenty thousand feet of floor space. Manufacture was resumed on an enlarged scale. New markets were found, and the variety of products enlarged to meet growing demands. Feed grinding mills, emery grinding tools, stock fountains and a line of hand farming tools were produced, principal attention being paid to the needs of the agricultural communities. Within two years manufacture of sad irons was undertaken on a large scale, and this company is now conceded to be the largest single producer of sad irons in the world. Popular automobile specialties were later added, and in 1918, the Loetcher-Ryan Mfg. Company, of Dubuque, Iowa, was absorbed and its factory equipment removed to Rock Island. This made possible the manufacture of electrical specialties, electric irons principally, at first. Other items have been added and the list is still growing.

Before this country entered the World War the Rock Island Mfg. Company supplied vises in large numbers to England and her allies. Several shipments lie at the bottom of the Atlantic, sent there by German submarines. When our soldiers were in training they shot at targets the metal castings of which were produced by this company. For several weeks the foundry was employed exclusively in filling a rush order from Rock Island Arsenal to supply all cantonments in the United States with targets.

In the beginning the sales of the Rock Island Mfg. Company totaled less than one hundred thousand dollars a year. Now they normally run more than a million annually, and there has been a healthy increase in every year, save one. Shop expansion has been necessary, twelve acres of land now owned by the company insuring sufficient room for the future. In the reaction following the war boom, the scale of operations was temporarily reduced, but the factory never has been closed. Neither have products been cheapened to stimulate sales. Only standard quality goods are made. Floor space has been increased to 150,000 feet, and 250 men are employed.

Main Building of Villa de Chantal

Villa de Chantal

Rock Island has a widely patronized school for girls and young ladies in Villa de Chantal, conducted by the Sisters of the Visitation, a Catholic order of long standing and high achievement. It occupies a magnificent site on the bluff overlooking the city and Davenport, and unfolding a panorama of the Mississippi valley for miles in each direction.

The Order of the Visitation was founded in France more than three hundred years ago. Its rules and traditions tend to encourage that spirit of refinement, simplicity and self-sacrifice which peculiarly fits its members for the training of young girls.

Founded in 1864, in Maysville, Ky., as Francis de Sales Academy, the school was removed to Rock Island in 1899. Already widely known for the quality of its work and drawing pupils from many states, in its new home it found a broader field and shortly became recognized as one of the leading college preparatory institutions.

The academy building is surrounded by fifteen acres of land, mostly level and sloping away on three sides, with a precipitate drop toward the city at the north. The site is exceptionally well adapted to landscaping and for purposes of outdoor recreation. Walks and drives have been laid about the grounds, the natural forest growth supplemented with a variety of other trees and shrubbery, and lawns and courts installed for the games and amusements in which girls delight to take part.

The course of study embraces academic, intermediary and primary departments. The academic department offers two courses, one general and the other college preparatory. Recognition that of all the arts music is the most subtle and far-reaching in its effects, and that its influence is most pronounced in refining and broadening the tastes of those who study it, the school always has laid particular stress upon this branch of its work. The department for both vocal and instrumental instruction is under the direction of graduates of the leading conservatories of the country. The piano, organ, guitar, harp, mandolin and violin are taught by competent instructors. The department of elocution is under the supervision of a graduate of one of the best known schools of oratory. Foreign languages are taught by accomplished linguists. Aesthetic culture and daily physical exercises, which promote gracefulness of carriage and the habit of true politeness, receive special care.

Villa de Chantal is centrally located and easily accessible from all parts of the Tri-City community. Thus it is enabled to serve many day pupils who live within a radius of a few miles. Though the school is conducted by a Catholic order, pupils of all denominations are received. Two free scholarships are maintained and medals are awarded for high standing in certain lines of work. The school library is one of the most complete in the state.

St. Ambrose College

St. Ambrose College, Davenport, was founded by the Rt. Rev. James McMullen, D. D., first bishop of Davenport, in the year 1882, and was incorporated under the laws of the state of Iowa on October 6, 1885. The present officers of the corporation are: Rt. Rev. James Davis, D. D., president; Very Rev. J. T. A. Flannagan, vice-president; Very Rev. William L. Hannon, secretary and treasurer.

It is a Catholic college devoted to the cause of Christian education. The institution owes its existence to the conviction that in the education of young men best results are obtained where the importance of the religious element in training is recognized and respected. St. Ambrose offers the regular college and high school courses. A large endowment insures a high standard of instruction and equipment. Very Rev. Wm. L. Hannon is president in charge of the institution.

Davis Hall, Men's New Dormitory

Main College Building

St. Katharine's School

Occupying a wooded knoll in the heart of the residential part of Davenport, overlooking the Mississippi, St. Katharine's School for girls and young women is set amidst ideal surroundings. Conducted by the Sisters of St. Mary, an Episcopal order, this institution offers unexcelled opportunities for the study of music, dramatics and art, and has been most successful in preparation of its students for entrance to eastern colleges for women.

Group of St. Katharine's School Buildings

Its work is conducted by seven Sisters, twenty-two instructors, all college graduates, a physical instructor and a nurse. Girls of all denominations are welcomed as students.

St. Katharine's School was opened September 24, 1884. Its establishment was made possible by a legacy from the estate of Miss Sarah Burr, left to Griswold College for the purpose of founding in the diocese of Iowa a church school for girls. A building and five acres of ground were purchased. Bishop Perry presided at the opening ceremonies. An addition to the building was made in 1885.

Until 1902 the school was conducted by Miss Emma Rice, later Mrs. J. J. Richardson, as preceptress. Then it was turned over to the Sisters of St. Mary, whose chief work is education. During the summer of 1902 the chapel and gymnasium were built. In 1907 three acres of land adjoining the school property, with the buildings thereon, were acquired.

St. Katharine's is not conducted for pecuniary profit. A few generous bequests and a modest endowment provided by its friends have made its expansion possible. Six scholarships to defray tuition of deserving girls needing financial assistance are provided.

Perhaps the best testimonial to the character of St. Katharine's is to be found in its list of alumnae, which is made up of members of leading families of Iowa, as well as from many other states, east and west.

Rock Island Transfer & Storage Company

Warehousing has come in the last few years to assume a degree of importance hitherto undreamed of. Changes in methods of handling merchandise and household goods, improved facilities for storing, and above all, the development of the motor truck, offering quicker and more efficient transport on short hauls, have helped to bring this business to the front.

Though a comparatively new concern, the Rock Island Transfer & Storage Company occupies a position of leadership in its field in the Tri-City

community, with a new $125,000 plant and with facilities to meet every demand incident to the warehousing business. March 27, 1917, the company was incorporated. At that time its equipment was limited to six teams and wagons, and it rented modest quarters on West Seventeenth street.

The company's new home at First avenue and Seventeenth street was formally opened June 20, 1922. It is a four-story building, of heavy vitrified brick construction, and so arranged as to make possible the erection of two additional stories. The main building is 77x110 feet, with garage adjoining, 73x110 feet, the latter being part one and part two-story. Latest ideas in warehouse construction were incorporated; efficient handling, safe storage and adequate fire protection being leading objectives.

Equipment now includes half a dozen trucks, more than a score of horses and many wagons. Moving and hauling, packing, crating and storing of household goods and storing and distributing merchandise are among the company's activities.

B. L. Burke is president and treasurer, N. B. Gosline vice-president and secretary and Loyal Robb superintendent of the concern.

Augustana Book Concern

The Lutheran publishing plant, known as the Augustana Book Concern, was established in Rock Island in the 80's. At first a small private printing shop and bookstore, it was purchased in 1889 by the Augustana Synod of North America and made the official publishing house of that Synod. As such the business has developed from a modest store and shop to its present

Home of Augustana Book Concern

capacity—an establishment fully equipped in every department of a modern printing and publishing plant, and showing an annual turnover of more than $280,000.00.

The output per year may be indicated by the following totals for the last calendar year: The number of copies of books and pamphlets printed in 1921 was 210,850, half of which were new, the balance reprints. The average number of copies of periodicals printed, counting one issue of each, exceeds 100,000. Since its establishment in 1889 the Augustana Book Concern has printed 5,014,130 copies of books, tracts, pamphlets and sheet music.

The business management consists of an elective board and an executive head. Mr. A. G. Anderson has served as manager since the founding of the synodical publishing house thirty-three years ago, and several heads of departments have served the same length of time. In point of volume of business done annually, the Augustana Book Concern ranks well to the front among commercial establishments in the city of Rock Island, and the postal revenues of this city are largely derived from this source.

Rock Island Fuel Company

During the winter of 1917-18, when the United States Fuel Administration was in charge of distribution of coal, the Rock Island Fuel Company played a very important part in looking after the comfort of the community.

Rock Island Fuel Co. Garage

During this severe period a coal famine existed. There was very little coal of any kind for domestic or steam use, and what little did arrive was quickly consumed. The Rock Island Fuel Company, using every possible resource, managed to secure enough fuel to avert real suffering. Besides taking care of its own trade, it furnished fuel to other dealers. It was at times necessary to route shipments through distant points because of existing embargoes.

In emergencies the Rock Island Fuel Company has never failed to supply the needs of the community. This company, the oldest and largest exclusive fuel concern in the three cities, enjoys a wide prestige because of the high quality of the fuels handled and the excellent service it renders.

The business was started in 1880, by William Hubers, who at that time dealt principally in wood. From a small beginning the business developed quickly, and in 1889 the Rock Island Fuel Company was incorporated with William Hubers as president. Mr. Hubers has remained at the head of the company and still takes an active hand in the business.

View of Gravity Bins

Today the company has yards in all three cities, and handles on the average about 100,000 tons of fuel a year. The company maintains a fleet of trucks besides many teams, has its own blacksmith and repair shops and other facilities for the efficient handling of the business. Besides its large storage yards in Davenport and Moline, the company has its great gravity bins in Rock Island, which are capable of holding six thousand tons at one time.

Rock Island Wood Works

Founded as an adjunct to sawmills of the vicinity when the lumber business on the Mississippi river was at its zenith, the Rock Island Wood Works has survived the days of the log raft, the screeching saw and the fragrant lumber pile in its home city and has become a permanent concern. Able business management and high standards maintained in quality of output have contributed to its success.

William Roth, one of the Founders of the Rock Island Wood Works

Starting as a partnership with William Roth and C. J. Schreiner as owners, the original name was the Variety Wood Works. That was in 1891. Mr. Schreiner's death late in the nineties led to the purchase of the Schreiner interests by Mr. Roth in 1901, and the incorporation of the present company.

The first factory building at the northwest corner of Eleventh street and Sixth avenue was soon outgrown and additions were made. Soon after incorporating the company secured the land on the corner diagonally opposite the plant and erected thereon the present office and warehouses.

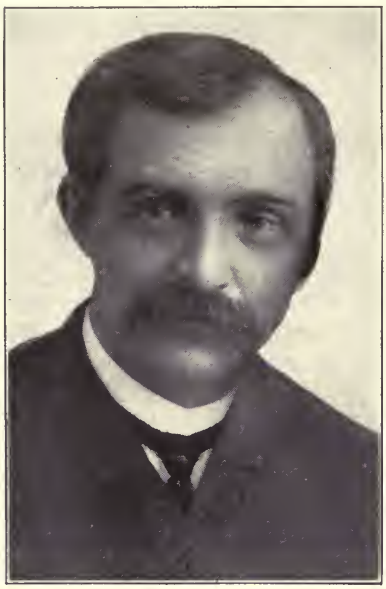
The company manufactures no stock goods, working only on architects' or builders' specifications, and has an enviable reputation for the high class of its product. Its millwork has been used in some of the best buildings in the three cities, among which may be mentioned the Rock Island postoffice, court house, Central Trust & Savings bank, Peoples bank, Fort Armstrong theatre, the Washington and Audubon schools, the Capitol theatre in Davenport and the Reliance building in Moline.

On the death of William Roth, early in 1922, his son, G. William Roth succeeded him as president and treasurer. Walter F. Roth is vice-president and Max Helpenstell secretary of the company.

G. William Roth, Present Head of Company

Beder Wood's Sons Company

Forty-six years ago Beder Wood, of Moline, had sufficient vision to see a future in the sand business, and out of that vision grew the flourishing industry now conducted by Beder Wood's Sons Company, operating an equipment capable of handling 600 tons of sand and gravel daily, besides large quantities of fuel and building material.



Beder Wood, Founder

Concrete was unknown in this country in 1876. Sand was used in relatively small quantities and gravel not at all in construction projects.

The river then, as now, offered the most available supply of clean sand, but the method of getting it out of the stream and onto the banks ready for use was crude and involved a great deal of labor.

When Mr. Wood began dealing in sand he obtained it by shoveling it from bars onto barges. The barges were poled from the bank at the foot of Sixteenth street, where his first yard was located, up the river to the nearest bar, and when loaded were returned to the starting point by the same method. Use of steam power to propel the craft and pump the sand had not been thought of. When the stage of the river was high and bars were covered with water it was necessary to use long-handled shovels, and the task was unusually arduous and slow.

Mr. Wood had not followed the sand business long before he began to cast about for better and more economical ways to handle his product. The centrifugal pump was then in use, but it never had been adapted to the raising of sand. Mr. Wood set about applying it to this use, and after much experimenting and a number of failures, succeeded in getting the desired results. He built the steamboat Edna and rigged it up with an equipment which has been the model for manufacturers of sand pumping machinery ever since. This was done in the early 80's, his pump being the first one used in the business on the Mississippi river.

Gravel did not come into general use till the 90's and then there was some opposition to it as a substitute for crushed stone, which Mr. Wood labored to overcome. Gravel now is sold in much greater quantities than sand, having to a large extent displaced crushed stone in concrete construction.

In 1902 the business was removed from Sixteenth street to its present location, the site of the old Keator sawmill on Eighteenth street, where two

half blocks are now covered by yards and buildings. Modern bins and docks have been built, and improved machinery installed for washing, screening, grading and handling gravel and sand.

The firm has built practically all its own boats and barges. Its fleet now consists of the steel-hulled towboat, Beder Wood, a pump boat, coal boat, spud boat and nine barges. It owns gravel pits at Hampton and below the mouth of the Meredosia, 20 miles above Moline. On shore the firm operates from ten to forty trucks and teams, the number varying with

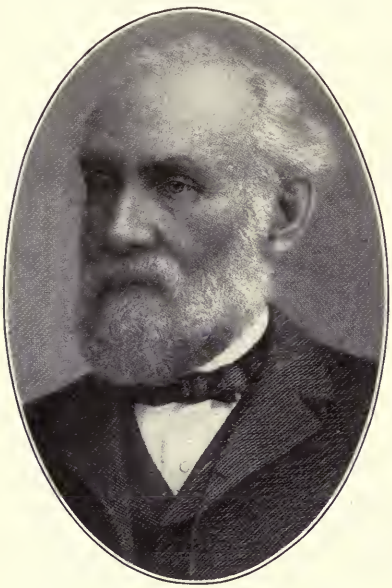
Upper left—Towboat Beder Wood. Upper right—Pump boat in action. Lower left Unloading barge at wharf.
Lower right—Part of land equipment of Beder Wood's Sons Company.

the season. Much of its gravel and sand is shipped to inland points within a radius of 100 miles. A full line of building materials, including brick, cement, tile, etc., is carried, and an extensive retail coal business is done. When not otherwise employed its boats do a general towing business.

Beder Wood, Sr., died in 1914. Since that time the business has been conducted by his sons, Beder Wood, Jr., and Benjamin Wood. During the World War large quantities of sand and gravel were supplied for construction work at Rock Island Arsenal, the War Department always having priority in the filling of orders.

The Robinsons, Pioneer Bankers and City Builders

Among the men who gave impetus to Rock Island's early growth, none was more active or interested in a greater diversity of enterprises than the late Capt. Thomas J. Robinson. He and his son, the late James F. Robinson, who continued his father's work during the few years that he was spared to do so, accumulated extensive property holdings, now administered as the Robinson estate by Mrs. J. F. Robinson.

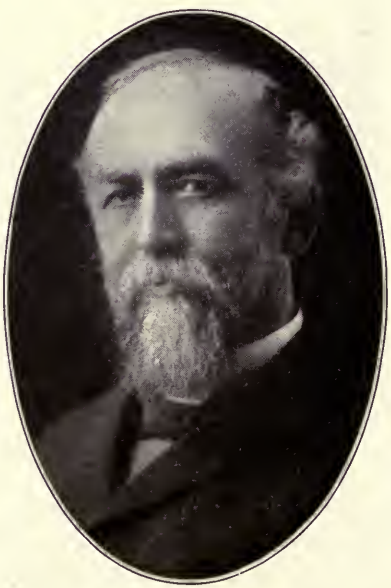


Capt. T. J. Robinson

Capt. Robinson was of New England birth and training. Born in Maine, in 1818, he made his own way from his early teens, when he learned the cooper's trade. Coming west at the age of twenty, he taught school, clerked on a river steamer and finally took up farming near Hillsdale, in Rock Island county. Three years later he removed to Port Byron, where he conducted a retail store for five years, and then in 1853 came to Rock Island. With his savings he bought from Judge John W. Spencer an interest in the Davenport & Rock Island Ferry company and took charge of the business, acquiring in that connection the title of "Captain," by which he was known thereafter.

The young captain lost no time in replacing with steam the horse power then used in operating the ferry. In less than a decade he had become full owner of the enterprise, of which he remained in control until his death.

Capt. Robinson always had supreme faith in the future of the Tri-Cities. Acting on the belief that they were destined to became a great industrial center, he exerted his energies and invested his capital in promoting home enterprises. He was one of the organizers of the Rock Island Stove Company, the Rock Island Glass Company, and many other concerns which flourished in the early days. Seeing in an eastern city a street railway in operation, he returned home and set to work to provide a



J. F. Robinson

similar utility here. As a result, the line between Rock Island and Moline, which became the nucleus of the properties of the present Tri-City Railway Company, was built. No other man in the community worked harder to secure congressional legislation for the establishing of Rock Island Arsenal than he. He spent much time and money interesting national law makers in the building of the Hennepin canal as the link in a water route between the Great Lakes and the Gulf of Mexico. He was a leading promoter of the railroad line between Rock Island and St. Louis, which is now operated by the Burlington as its St. Louis division. In connection with Weyerhaeuser & Denkmann, Rock Island lumbermen, he backed enterprises for the development of the lumber industry in Wisconsin.

In 1871 Capt. Robinson founded the Rock Island National Bank. He became its president, holding the office till his death, and made it one of the strongest financial institutions in western Illinois. The supreme test of his business career came in 1873, when the stability of his bank was threatened by the resumption of specie payment, ordered by President Grant. Many persons now living recall the panic of 1873, in which only the strongest business concerns survived. The "Robinson bank," as the Rock Island National was generally known, came through unscathed, but its president staked every resource he possessed in winning the fight. To provide a home for the bank the Robinson building at Second avenue and Eighteenth street, one of the landmarks of the business district, was constructed.

Upon the death of Capt. Robinson, April 12, 1899, his son, J. F. Robinson, who was his sole heir, succeeded him as president of the Rock Island National Bank. In December, 1899, the Central Trust & Savings Bank was organized, with Mr. Robinson president, and occupying quarters jointly with the Rock Island National. Later the two banks were merged under the name of the younger institution.

James F. Robinson was born in Rock Island county, February 27, 1849. Upon completion of his schooling, which included a classical course at Northwestern University, he became cashier of the Rock Island National Bank, a position which he held for 25 years. He died May 23, 1902.

The younger Mr. Robinson was a man of scholarly tastes. Like his father, he led a most exemplary life, had no fear of hard work and earned a reputation for dealing honestly and fairly with his fellows. Under his management the properties he inherited prospered, and he added to them by engaging in new enterprises. He always had at heart the best interests of his home city.

Both father and son were affiliated with and actively supported the Methodist Episcopal church. Both gave liberally in aid of schools and charitable institutions, and devoted large sums to the relief of the needy.

J. F. Robinson was married in 1879 to Miss Mary E. Rhoads, of Pekin, Ill. Two daughters were born to the union, but both died in infancy.

Leading Rock Island Merchant

Credit for Rock Island's high standing as a merchandising center is due in large measure to the late L. S. McCabe. For forty-five years actively engaged in the retail business in the city, his energy, enterprise and fair dealing built up a patronage extending many miles beyond the city's

L. S. McCabe

borders and helped in no small degree to bring prosperity to those engaged in other lines of trade. Mr. McCabe always had great faith in the community. Combined with his rare ability as a merchant was an unusual insight into the motives which actuated the buying public and a belief in the power of constant, truthful advertising. The publicity he obtained for his enterprise was backed by dependable goods and honest service.

L. S. McCabe was born in Delaware County, New York, December 11, 1846, and died in Rock Island September 26, 1915. On coming west in 1868,

he taught school for two years in Drury township, the late Judge William H. Gest being county superintendent at that time.

The first McCabe store, located at what is now Second avenue and Sixteenth street, was opened October 5, 1870, its stock consisting of drygoods and household necessities. Even in that early day the young merchant saw the advantage of creating separate departments for the sale of different classes of goods, which later became the plan of merchandising in all the larger establishments. He also realized the possibilities of economy in larger buying for a number of business enterprises, and as soon as he had sufficient capital he opened other stores, cities in which he operated including Davenport, Muscatine and Des Moines, Iowa, and Chicago and Ottawa, Illinois. Growth of his business in his home city, however, demanded so much of his time and attention that eventually he closed out all branches and centered his resources in Rock Island. There he built up a truly metropolitan department store, which, during the later years of his life, was recognized as a leader in the Tri-City field.

Early in his career Mr. McCabe began acquiring real estate in the business district of the city. The Gayford block on Second avenue, between Seventeenth and Eighteenth streets, the present Second avenue home of the L. S. McCabe & Co. store, was his first purchase. Adding to his holdings from time to time, he ultimately became the largest individual owner of business property in the city of Rock Island. In 1899 the present company was incorporated and the following year the Third avenue building, with 80,000 feet of floor space, was erected, providing a store one block in length, with entrances on two avenues. Since his death the business has been continued by the company bearing his name.

While a master of detail and always in close touch with every branch of his business establishment, Mr. McCabe never permitted himself to become wholly absorbed in it. His abundant energies always sought additional outlets, and as a result be became identified with various undertakings outside of the retail field. He was vice-president and director of the Moline Central street railway, one of the first in the west to be electrified. He helped to lay out Prospect Park. He was president of the Rock Island Safety Deposit Company, builder of the Safety building, and of the Colonial Hotel Company, being owner of the site of the building, now known as the Como hotel. He was an organizer and an officer of the Central Trust & Savings bank. He was interested in agriculture, owning several fine farms on which he raised blooded Angus cattle.

In religious, social and political affairs Mr. McCabe was also deeply interested. In 1902 he was elected state senator to represent the Thirty-third district, serving one term of four years and declining re-election.

Mr. McCabe was married to Miss Marion V. Reck, August 30, 1888. He is survived by the widow and three daughters, the Misses Dorothy Clay, Marguerite Baxter and Marion McCabe Bruner.

Federal Surety Company

The Federal Surety Company is a stock company located in Davenport, Iowa. This company, with a capital of one million dollars, writes casualty insurance and surety bonds. It is owned by many prominent people in the Tri-Cities and at present transacts business in eighteen states and the District of Columbia. The Federal Government has licensed this company to write government business throughout the United States. The Federal is one of only twenty-nine companies in the United States to be so licensed, and only two of these companies are located west of the Mississippi.

W. L. Taylor is the very efficient manager of the Federal Surety Company, and the effects of his splendid management are shown in the rapid growth of this company. It was established during the month of July, 1920, and since that date has attained a position of confidence and trust usually accorded only to companies which have put many years of faithful service behind them. Best's Insurance Guide with key ratings for 1922 rates the Federal Surety's paying record as "excellent" and gives its management the highest rating accorded to companies of this kind.

Each department is managed by men with years of experience in their respective lines. The directors of this company are:

M. H. Calderwood, Ex-President of the Iowa Bankers Association, Director and President of the Eldridge Savings Bank, Director and President of the Mississippi Valley Fair and Exposition Association.

George E. Decker, Director and President of the Register Life Insurance Company, also Director of the Iowa National Bank.

Charles Grilk, Counselor and Attorney-at-law, General Counsel Register Life Insurance Company.

H. C. Kahl, Director and Vice-President of the Walsh Construction Company, Director and President of the Blackhawk Hotel Company, Director and Vice-President of the Miller Hotel Company, Director of the Citizens Trust and Savings Bank, Director of the Iowa National Bank, also sole owner of the Kahl building.

Charles Shuler, Director and President of the Iowa National Bank, Director Colorado and Utah Coal Company, Maple Coal Company, also interested in some of Davenport's largest institutions.

Frank B. Yetter, Director and active Vice-President of the Iowa National Bank, Director Register Life Insurance Company, member of the Executive Committee Clearing House division of the American Bankers' Association, also Ex-President of the Iowa Bankers' Association.

W. L. Taylor Vice-President and General Manager of the Company.

Charles Shuler is the President of the Federal Surety Company.

W. L. Taylor, Vice-President and General Manager Federal Surety Company

Geo. M. Bechtel & Co.

In April, 1891, the investment house of Geo. M. Bechtel & Co. was established in Davenport, Iowa, to specialize in the purchase and sale of Iowa municipal bonds. For over thirty years the institution has grown and prospered by adherence to conservative and safe principles of investment banking.

It is interesting to note the great difference in the investment field of that day and this. We find that while the State of Iowa was well settled, it was not the wealthy, highly developed state that it is today. It is reported that the entire bonded indebtedness of all the cities, counties and school districts in the state at that time amounted to only $11,000,000. But the need of capital for public improvements existed, and the prosperity of the greatest agricultural state in the union was dependent upon it. Naturally many of its bond laws were new and untested. We find further that the market for municipal bonds existed only among the banks and insurance companies of New York and New England, while some of the bonds found their way to London, along with other classes of American securities. But the number of bond buyers among the general public was limited. At that time it may be said that Iowa was considered by the eastern investor as a field for high rate semi-conservative investments, such as we now find in so many western and southern localities. But above all, Iowa possessed the potential wealth and prospect for prosperity that does not exist in any undeveloped part of the United States today. The favorable reception of Iowa bonds in the market then, and also their future market, was wholly dependent on the judgment of and development by those who dealt in them. This is briefly the situation at the time of the establishment of the house of Geo. M. Bechtel & Co.

With no change in policy nor deviation from the ideals of conservative investment banking, this institution stands today as a tribute to the judgment and integrity of its founder, Mr. Geo. M. Bechtel. Money and the investment markets are no longer confined to the east. The municipal bond, the government bond, or any bond is common stock in trade. The banker, the merchant, the professional man and the wage earner look upon a safe conservative bond as a logical place for spare funds or savings. A record in Iowa municipal bonds of "no loss to any investor of principal or interest in thirty years" has earned for them the name of "Little Governments" among the customers of Geo. M. Bechtel & Co. It is estimated that there is now outstanding in the State of Iowa $125,000,000 of city, county and school bonds and probably an equal amount has been issued and paid during the past thirty years. In all of this financing this institution has been very closely associated. Hardly a municipality exists in the state that at some time or other has not been assisted by this house.

Geo. M. Bechtel & Co. serves today thousands of conservative investors in the United States who believe in safe, convenient and tax-free investments.

The White-Phillips Company

The White-Phillips Company, Investment Bankers, Davenport, Iowa, is recognized as one of the foremost institutions of its kind in Iowa. The concern specializes exclusively in the handling of municipal bonds in the middle west—primarily in Iowa, Illinois and Nebraska.

The universal interest of the investing public in municipal bonds has caused the firm to prepare an interesting booklet explaining how bond values are computed and what they represent. Copies of this booklet may be had upon request, free of charge.

Since the World War this class of securities, which found but a limited field of buyers twenty years ago, has attained wide popularity, for the very good reason that they form a nearly ideal investment for wage earners and those of limited means, as well as for those of larger financial resources. A people which had learned to buy government bonds to the value of billions of dollars has turned largely now to the bonds of cities, towns, school districts and counties.

The White-Phillips Company is at all times prepared to answer any questions which may arise with reference to municipal bonds. The services and facilities of this banking house are yours to command, and it is their earnest desire that you avail yourself of them. All inquiries are accorded serious, respectful and courteous personal consideration.

Specializing exclusively in the handling of municipal bonds in the great corn belt, they at all times have on hand an ample list of diversified offerings which permit a varied selection to meet any particular requirements.

The institution has grown to an enviable position of stability, strength and high character, and has branch offices located in Dubuque and Des Moines, Iowa, and Omaha, Nebraska, with a personnel of over forty people.

The officers and members of the firm are:

President—George White.

Vice-President—B. A. Phillips.

Secretary—Robert Alexander.

Treasurer—S. G. Glaspell.

Cashier—Walter E. Vieth.

Their facilities for handling any investment needs are unsurpassed and without peer in their chosen field.

Peoples National Bank and American Trust & Savings Bank

Forty-eight years ago the Peoples National Bank, now the only national bank in Rock Island county, was organized. Bailey Davenport was its first president and its directorate included Frederick Weyerhaeuser, George

J. L. Vernon, President Peoples National and American Trust and Savings Banks

Wagner, Ignatz Huber, Charles Tegeler, Joseph Rosenfield, August Huesing, Frederick W. Kellerstrass, Frederick Hass, Henry Burgower, and Peter Fries. All have passed away, most of them many years ago, but descendants of nearly all remain and the family names are closely linked with Rock Island's history from the earliest days.

The Peoples National Bank first did business in the 1800 block, coming to its present quarters about ten years later. In 1911 the property at Second avenue and Eighteenth street was purchased and remodeled.

Peoples National Bank Building

Henry Burgower was the first vice-president and John Peetz the first cashier. On the death of Bailey Davenport, Joseph Rosenfield became president, being followed by Otto Huber. Present officers are:

President—J. L. Vernon.

Vice-President—Robert Wagner.

Cashier—G. O. Huckstaedt.

Assistant Cashier—F. E. Sudlow.

Directors—G. O. Hucksteadt, C. B. Marshall, James F. Murphy, G. W. Roth, C. A. Schoessel, J. L. Vernon, Robert Wagner.

The American Trust & Savings Bank was formed in 1912, and occupies quarters jointly with the Peoples National. Officers are the same, except that the directorate of the former includes S. J. Apple, C. A. Bopes, N. A. Larson, C. J. Montgomery, John A. Murrin, L. Ostrom, H. C. Schaffer, and J. A. Weishar.

The combined capital and surplus of the two banks is $400,000 and their joint resources approximately $3,000,000.

R. J. Walsh & Company

Founded in 1917 and incorporated in 1920, R. J. Walsh & Company has become a leading Tri-City bond and mortgage investment company. Since the date of incorporation it has occupied attractive ground floor quarters in the Kahl building, 320 West Third street, Davenport.

R. J. Walsh

In its earlier years the concern handled stock issues for industrial concerns and scored a remarkable success. Latterly it has turned its attention exclusively to the buying and selling of first mortgage real estate gold bonds. Here, also, it has done a large volume of business and has built up an extensive and steadily growing patronage.

The company maintains a staff of expert salesmen. It pays particular attention to Iowa and Illinois securities, its field being one in which real estate values, both urban and rural, are uniformly sound and normally show a steadily rising tendency, making an ideal security for conservative investment. Progressive development of this territory, assured by every industrial, commercial and agricultural aspect, gives positive promise of a steadily growing volume of business, of which the Walsh organization may be relied upon to secure its share.

Office of R. J. Walsh & Company

The company is capitalized at $250,000. It is backed by local men of high standing financially and of unquestioned integrity. Its resources enable it to handle independently large issues of securities, thereby doing business expeditiously and with maximum returns. Officers of the company are:

President, Treasurer and Manager—R. J. Walsh.
Vice-President—A. E. Carroll.
Secretary—I. W. Simons.
Directors—R. J. Walsh, A. E. Carroll, I. W. Simons, Dr. F. Neufeld, George A. Parks, Dr. C. L. Barewald, R. O. Denkman and A. C. Klindt.

Rock Island Savings Bank

The Rock Island Savings Bank is one of the solid institutions of the city. Organized in 1890, it was the first savings bank in Rock Island. Quarters originally were in the then Mitchell & Lynde building, now the home of the State Bank.

Capital stock at first was $100,000, and E. P. Reynolds was the first president, with F. C. Denkmann vice-president and J. M. Buford cashier. P. L. Mitchell became president in 1892 and J. M. Buford was promoted from the cashiership to head of the bank on the death of Mr. Mitchell, in 1899. Phil Mitchell followed Mr. Buford and H. S. Cable served as president from 1910 to 1922, being succeeded by Hugh E. Curtis.

From the first the Rock Island Savings Bank made rapid progress. In a decade its deposits had increased from $333,864.84 to $1,704,027.06. At the close of 1922 deposits were $4,300,000.00. Growth of business necessitated more roomy quarters, and in the fall of 1911 the present home, at Eighteenth street and Third avenue, built exclusively for banking purposes, was occupied. Capital, surplus and undivided profits at the close of 1922 were over $550,000 and resources over $5,000,000.

Present officers are: Chairman of board, H. S. Cable; president, Hugh E. Curtis; vice-president, M. E. Strieter; vice-president-cashier, W. G. Johnston; assistant cashiers, J. H. Meehan and R. W. Osterman.

Directors—H. S. Cable, Hugh E. Curtis William H. Dart, Franz Happ, W. G. Johnston, Phil Mitchell, John W. Potter, M. E. Strieter.

Central Trust & Savings Bank

History of the Central Trust & Savings Bank really goes back to Sept. 11, 1871, when the former Rock Island National Bank was organized. The savings institution came into existence Dec. 2, 1899, and the two were consolidated April 1, 1915, under the present name.

Captain T. J. Robinson was the founder of the Rock Island National. Quarters first were at No. 23, Illinois street, now 1609 Second avenue. In 1876 the Robinson building, at Second avenue and Eighteenth street, was occupied. Consolidation of the two banks was coincident with the occupying of the present home on Third avenue at Eighteenth street.

Captain Robinson, first president of the Rock Island National, was succeeded in that office at his death by his son, the late J. Frank Robinson. The late H. E. Casteel was the third president.

The Central Trust & Savings Bank is capitalized at $200,000. Its surplus is $200,000 and undivided profits $190,000. The present officers are:

President, M. S. Heagy; vice-presidents, H. H. Cleaveland, C. J. Larkin, H. W. Tremann; cashier, L. M. Casteel; assistant cashier, R. E. Swanson; trust officer, E. H. Krell.

Directors—M. S. Heagy, H. H. Cleaveland, C. J. Larkin, H. B. Simmon, H. W. Tremann, J. W. Tremann, Oscar F. Smith, W. J. Sweeney, Dr. G. A. Wiggins, George H. Richmond, H. D. Mack, W. S. Parks.

State Bank of Rock Island

Successor to Mitchell & Lynde, Ye Olde Banke, Established 1852

OFFICERS

Phil Mitchell, President — K. T. Anderson, Asst. Cashier — C. F. Channon, Asst. Cashier
I. S. White, Vice-President — B. J. Mitchell, Asst. Cashier

DIRECTORS

Phil Mitchell — I. S. White — G. L. Eyster — B. D. Connelly — Frank Mixter
E. H. Guyer — B. C. Hartz

Capital $200,000.00 — Surplus $100,000.00 — Undivided Profits $100,000.00

The first bank in Rock Island County was established in Rock Island in 1852, by Cook, Sargent & Parker, bankers and business men of Davenport, Iowa, in the room now occupied by Martin Cigar Store at 1630 Second avenue.

In 1854 the bank was moved to the then new brick building erected by Bailey & Boyle at Second avenue and Seventeenth street, the site of the present State Bank building, which has been the home of this bank and its predecessors for sixty-eight years, the present structure having been built by Mitchell & Lynde in 1890.

Mitchell & Cable (P. L. Mitchell and P. L. Cable) bought out Cook, Sargent & Parker in 1856. At that time there were four banks in Rock Island, including the Rock Island Bank (Negus, Osborn & Lee), Bank of the Federal Union (N. B. Buford, president), and Fish, Goodale & Lee.

Mitchell & Lynde (P. L. Mitchell and Cornelius Lynde), succeeded Mitchell & Cable in 1860.

Following the panic of 1857-1858, and the succeeding hard time years, Mitchell & Lynde became the sole survivor, and was the only bank in Rock Island for several years, until 1861, when Mitchell & Lynde organized the First National Bank, charter No. 108, with P. L. Mitchell as president. This was one of the first national banks to be organized, as shown by its charter number.

Mitchell & Lynde succeeded the Rock Island Bank in 1861, and also succeeded the First National Bank of Rock Island in 1890.

The other pioneer banks in Rock Island county were Gould, Dimock & Co., Moline, dating from 1856, and W. H. Devore, Port Byron, about 1858.

The Rock Island National Bank (T. J. Robinson, president) was started in 1872.

Phil Mitchell, State Bank president, has been in continuous service with the bank and its predecessors since 1861, sixty-one years, and it is believed he is the oldest bank officer in time of service in the State of Illinois.

First Trust & Savings Bank of Rock Island

Youngest among Rock Island financial institutions is the First Trust & Savings Bank. Though it is less than three years old, it has gone ahead with rapid strides, proving the wisdom, foresight and ability of its founders, and demonstrating that there was a fine field for its business activities. Each month since its opening has shown a substantial growth. Its deposits now total one million dollars.

Charter for the First Trust & Savings Bank was issued December 29, 1919. The doors were opened for business January 24, 1920, quarters being in the Robinson building, at the southwest corner of Second avenue and Eighteenth street.

Organized under the laws of Illinois, the bank is also a member of the Federal Reserve system, being thus under both state and federal inspection.

The First Trust & Savings bank gives special attention to the needs of the farmer, for whom excellent service is given. There are attractive features for handling long-time farm loans. The bank also enjoys a very substantial city business. At the time this was written it was qualifying as a trust company, which would provide additional service for its rapidly increasing list of customers, in addition to existing commercial, savings and investment departments.

Rapid growth of business has made necessary an increase of capital, and old and new customers are being offered a part of additional stock authorized at the last annual meeting of stockholders, sale of which will provide a total of more than a quarter of a million capital and surplus. Capital and surplus now are $130,000. Officers are:

President, C. A. Beers; vice-president, C. C. Clarke; cashier, O. O. Liitt; assistant cashier, R. P. Gilloley.

Directors—C. A. Beers, J. M. Welch, O. O. Liitt, W. S. Yerbury, J. A. Wells, Walter Foster, W. J. Krull, Walter J. Klockau, John Lipton, T. A. Pender, C. C. Clarke and Allen J. Miller.

French & Hecht

Primitive man pushed logs and stones about on wooden rollers. Later he evolved the wooden disc wheel and the axle. It was a long step from the disc wheel to the spoke wheel, which answered its purpose very well until the day of rapid transport dawned. Then it was necessary to have something stronger to withstand the shocks and strains incident to the moving of heavy bodies at high speed.

Once the metal wheel was created new uses for it were shortly found, and it proceeded to displace the wooden wheel in fields where it had been

Part of the French & Hecht Plant

thought the latter never could be improved upon. Only a few years ago the wooden wheel was used on nearly all agricultural implements. Now few farm labor-saving devices are so equipped. The motor vehicle is passing through the same evolutionary process as has taken place in farm implements, and the time is not far distant when the wooden wheel will be but a memory.

French & Hecht, of Davenport, are the largest exclusive manufacturers of metal wheels in the world. They have developed and perfected the steel spoke wheel, in the manufacture of which they stand preeminent.

French & Hecht started in 1890, as a corporation known as the Bettendorf Metal Wheel Company. In 1909, without material change of ownership, the present partnership was formed. There are now three general partners in the enterprise, Messrs. G. Watson French, J. L. Hecht and W. H. Stackhouse, all of Davenport.

Victor Storage Battery Company

Rock Island claims the largest western manufactory producing storage batteries—the Victor Storage Battery Company, located at Mississippi river and Fourth avenue. The size of the institution is realized by comparatively few Tri-City residents, for while the plant has excellent transportation facilities by rail, highway and water, it is at some distance from the more generally traveled streets. A visit to the factory helps to impress one with the diversity of industrial products the community has to offer.

The Victor Company, whose officers are Dick R. Lane, president; George White, vice-president; B. F. White, secretary, and Tully White, treasurer, was incorporated early in 1914. During the last eight years it has developed a large and well-deserved demand for the S. O. S. line of

batteries. Manufacturing was started in the building at Twenty-fifth street and Fourth avenue, now occupied by the J. Peterson Company. In August, 1917, the concern removed to Moline and occupied a building at Seventh street and Fourth avenue.

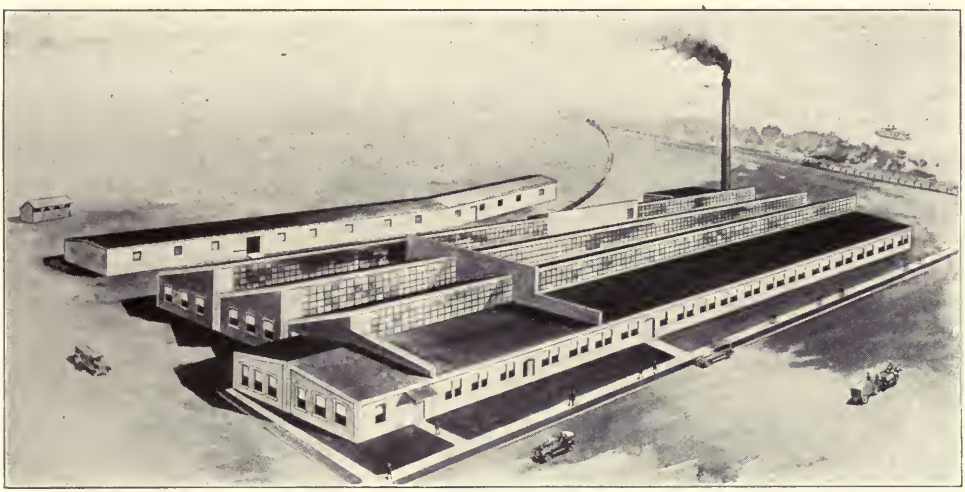
Rapid growth of the business made larger manufacturing facilities imperative. The old Weyerhaeuser & Denkmann sawmill site at the foot of Fourth avenue in Rock Island was acquired and the present modern factory erected in 1919. This building is the last word in modernity and convenience for the making of storage batteries in large quantities. It is equipped with the latest appliances in machinery, lighting, ventilation, etc. The initial steps in manufacturing take place at one end of the plant and the finished product leaves the building at the other end. A switch track from the C. R. I. & P. line parallels the factory and makes possible the loading and unloading of several cars at the same time. The property extends from Fourth to Sixth avenue along the bank of the Mississippi, so that the company is in an ideal position to benefit from the revival of river traffic.

Storage batteries for all purposes are made by the Victor Company, but special attention is paid to starting and lighting batteries for automobiles, farm lighting, power plants and for radio use. These batteries enjoy an enviable reputation not only in the United States, but in practically all parts of the world.

Phelps Light & Power Company

Possible uses of electricity on the farm are almost without limit. How to get the electricity to the farm remote from central power stations is a subject that has been given much attention and in the solving of which much capital has been invested. Out of the experimental period has come the modern farm lighting and power plant.

Among the farm lighting and power plants now in the market, that manufactured by the Phelps Light & Power Company, of Rock Island, stands without a superior for all-around uses. It is economical, reliable and durable,



Phelps Light & Power Company Plant

and it develops sufficient power so that it may be used for belt work and battery charging simultaneously. The Phelps generator has a guaranteed rating of 1,500 watts. The Phelps motor is guaranteed to deliver three and one-half horsepower, in addition to operating the generator. The 235 ampere-hour battery will run a half-horse power electric motor.

R. W. Phelps began the manufacture of gasoline motors in 1915 at Wilton, Iowa. Early in 1916 he bought out the Warner Arc Lamp Company, manufacturers of electrical appliances, and removed to Tipton, Iowa. Late the same year the plant was brought to Rock Island, where, till 1918, motors were made for the Marron Mfg. Company. In the latter year manufacture of the Phelps farm lighting plant was begun.

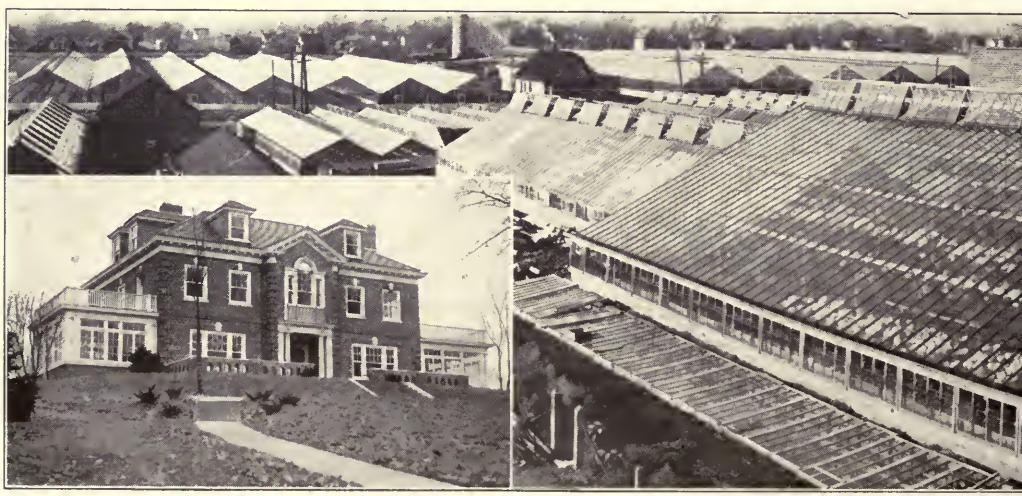
The Phelps factory is the largest in the country exclusively devoted to the making of farm light and power equipment. It occupies 40,000 feet of floor space, employs 150 men and is capable of producing 100 complete plants daily. Phelps plants are being sold all over the United States and in foreign countries. The company is capitalized at $800,000 and the officers are: R. W. Phelps, president; A. G. Bush, secretary; W. J. Moore, treasurer.

The L. Stapp Company, Florists

For half a century flowers from Stapp's have helped to express the deeper feelings of the people of Rock Island and of the Tri-Cities. They have added warmth and color and beauty to festivals; they have paid tribute to the deserving; they have been offered as evidence of affection and loyalty; they have softened the poignant grief of separation. Human emotions from the highest to the lowest have responded to their presence and their influence for the making of better lives in the community has been beyond calculation.

It has been more than half a century since John Stapp, of German birth, and a florist and gardener by training and inclination, established the business which now bears his name. He had a tract of ten acres in the west end of Rock Island and there was built the first greenhouse in the city. Always he preferred to cultivate flowers, but pioneer Rock Islanders, more prosaic than their descendents of this day, preferred to buy vegetables. So at first the garden was a more prolific source of revenue than the flower bed, and was given correspondingly more space and attention.

Approximately fifty years ago the site of the present greenhouses on Twelfth street was acquired and there a plant has been developed till it is the largest exclusively devoted to the production of flowers in the three cities, and is exceeded in size only in the larger population centers. Eighteen acres of land are cultivated and one-third of the tract is under glass. A specialty is made of roses, which few florists attempt to grow extensively. About two-thirds of the greenhouse area is devoted to this flower. Production of vegetables was discontinued many years ago.



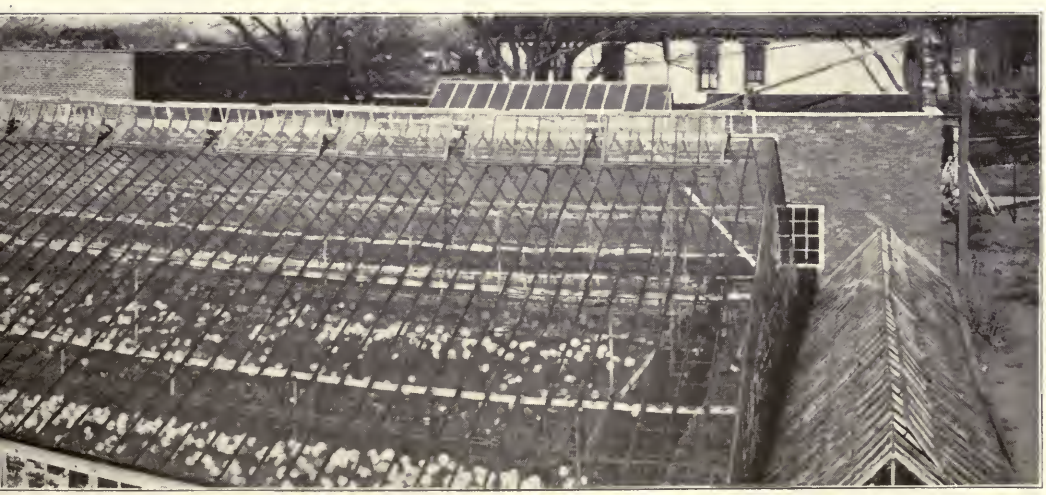
Panoramic view of Stapp Greenhous

L. Stapp, son of the founder of the business, is the present head of the company. He grew up in the work, and, like his father, has a special aptitude for it. After he attained his majority he became a member of the firm, which for a number of years was known as John Stapp & Son. In 1903 the father retired and in 1916 the present company was incorporated.

Most of the expansion of the plant and business has taken place under the son's management. Year by year the greenhouses have been extended, construction always being of the latest and most durable type. During the present year (1922) a beautifully appointed family home was erected east of the plant on a knoll overlooking the surrounding country.

In the beginning the Stapp greenhouses catered exclusively to the local demand, but in later years a large and steadily growing shipping business has been built up, reaching over Illinois and Iowa and even beyond. By far the greater part of the output is disposed of at wholesale, though an extensive retailing business continues to be done.

Meeting the practical problems of flower culture and sale involves activities on a large scale in many directions. For instance, it requires a seven and one-half-ton ice machine to keep the cold storage room at the proper temperature. The bill for water alone is $1,000 annually, and it requires 2,500 tons of coal a year to heat the greenhouses. Hundreds of yards of surface soil are hauled from a nearby tract each season to renew the fertility of the flower beds and to guard against the mysterious train of evils to highly domesticated plants arising from "soil sickness." About thirty men are given steady employment.



e new Stapp residence inserted at left.

The John P. Hand Company

The first automobile starting and lighting battery service station opened in the Tri-Cities was that of The John P. Hand Company, agent for the Willard line. It was established in 1914, in a small store room at Second and Iowa streets, Davenport, by the present proprietor. At that time present day electrical equipment for automobiles was largely in the experimental stage, not over 50,000 cars in the United States being so outfitted. Mr. Hand, however, was quick to see the possibilities of the battery business, and so allied himself with the Willard company, one of the earliest in the field

Tri-City Service Stations of John P. Hand Company. Top—Davenport. Lower left—Rock Island. Lower right—Moline.

and which may now be said to dominate the industry, inasmuch as seventy-five percent of all automobile manufacturing concerns in this country regularly equip their cars with Willards.

Under the impetus of a rapidly growing popular demand the Hand battery station soon needed more room. In 1916 it occupied its present quarters at 315 East Second street, built especially for its use. Two years later, for the convenience of owners of Willard-equipped cars in that city, the company built its present station at 523-525 Fourteenth street, Moline, and in 1920, followed with the one at 2001-2003, Fifth avenue, Rock Island.

Until the current year (1922), the business was confined to battery sales, repairing and service. A starter and generator repair department has now been installed in all three cities.

The Faerber Agency

Deprived of the opportunity for schooling at the age of eleven, when circumstances compelled him to go to work in his father's meat market, A. J. Faerber, like many another American boy, yet found a way to acquire an education and win success. Today he is head of one of the largest insurance agencies in the state of Iowa, and interested in a number of leading Davenport business and industrial enterprises.

A. J. Faerber

Mr. Faerber was born on a farm in Wood county, Ohio, Nov. 24, 1877. When seven years of age his parents removed to Woodlake, Minn. At sixteen the youth started out for himself, working with the Cudahy Packing Company, of Milwaukee. It did not take him long, however, to decide that the insurance business offered a better field for his talents than the meat business did. When seventeen he started work for the Prudential Insurance Company and at eighteen he was made inspector, a position he held till 1902. Then he removed to Davenport.

In Davenport Mr. Faerber became one of the organizers of the Guaranty Life Insurance Company, retaining his interest in that concern till 1911. Then the present general agency of the National Life Insurance Company of the United States was established and he was appointed to that position.

Mr. Faerber has been an active promoter of a number of new industries in Davenport, being an official in several corporations. He was one of the organizers of the Federal System of Bakeries and the Community Oil Service Station Company, both of which operate extensively throughout the central west.

Mr. Faerber's public spirit is attested by the fact that he is a past president of the Davenport Chamber of Commerce; was long a member of the Greater Davenport Committee; a charter member of the Greater Iowa Association, now the Iowa State Chamber of Commerce, holding a directorship in the same; is secretary of the board of trustees of the Y. M. C. A., and was County Chairman of the Council of National Defense and Chief Justice of the Liberty Loan Court, active during the war.

The Iowa Steam Laundry Company

William Pohlmann, Pres. and Treas.

Only by the closest attention to detail, prompt and satisfactory service and uniform courtesy in dealing with the public can a successful laundry business be built up. The Iowa Steam Laundry Company, of Davenport, has filled these requirements. It has made an unusual success in its field. Four laundry establishments, some of them among the oldest in the city, have been combined to form what is now known as "The Laundry of Quality."

In 1890 J. K. Buck opened the Electric Laundry in the east half of the present plant of the Iowa Steam Laundry Company, at 209-215 East Third street. For fourteen years he conducted the business, Bert Hayes buying an interest in the latter part of his regime. Soon after the launching of the Electric concern Miller & Lucas incorporated the Iowa Steam Laundry Company and set up business just across the street. C. A. Keeler and J. F. Halligan became owners of the Iowa Steam Laundry in 1907, and also absorbed the Electric Laundry, Mr. Buck retiring and Mr. Hayes coming in as part owner. The east half of the present quarters was occupied at that time.

Charles H. Martyn, Vice-Pres. and Supt.

William Pohlmann, now president and treasurer, acquired control of the business in August, 1908. A year later the upper floor of the building at 213-215 East Third street was occupied and then the building on the west was added, the lower floor being used as an office and the upper for laundry purposes. Eight years ago the Star Laundry was absorbed, and in 1918 the City Steam Laundry was purchased from the Belle Fink Company, who had conducted it for many years. In December, 1917, the capital was increased to $75,000.

Rudolph Hansen, Sec. and Mgr.

The Iowa Steam Laundry Company does a general laundry business, specializing in bundle work, and rough dry and finished family laundry. It has a big investment in equipment, which includes practically every modern device used in the business. It has its own power plant and a water softening apparatus of large capacity. There is a labor-saving machine for nearly every operation in the cleansing, drying and ironing of fabrics. The company regularly employs from fifty to sixty persons.

The M. V. Boies Company

Perhaps no undertaking business in the state of Iowa dates back as far as the M. V. Boies Company, of Davenport, founded in the early forties.

The first shop of Israel Hall, who established the mortuary, was on Brady street between Third and Fourth. Later it was removed to the site of the present federal building on Perry street, and in 1910 the M. V. Boies firm occupied its present quarters at 323 Perry street.

Exterior and interior views of M. V. Boies Company Mortuary

In the early days Mr. Hall and Mr. Boies made coffins as they were needed. As soon as casket manufacturing became standardized a stock of metallic and wooden coffins was purchased. About this time a hearse and box wagon were bought, being among the first vehicles of this kind in the vicinity.

Mr. Boies passed away in 1890, and the extensive business that he had built up was then incorporated under the present name, Mrs. Boies being president and the son, Warren D. Boies, manager. On the latter's removal to Chicago some years ago, his place was taken by Selden Morse Clapp, grandson of M. V. Boies, who is now in charge.

The present quarters are modern in every respect, with offices, casket display rooms, a preparation room, a large funeral chapel, which is extensively used, a large garage for rolling stock, and other adjuncts necessary to a modern mortuary. The chapel is finished in fumed oak, with beautiful stained glass windows of Gothic design. It seats sixty people, but by opening into the reception room accommodations are provided for forty more. Mr. Clapp is assisted by two male licensed embalmers and by Mrs. Lottie Boies Clapp, also licensed as an embalmer, who looks after the department for ladies and children.

The Moline Paint Mfg. Company

The Tri-City community, a leading center for the manufacture of implements, vehicles and other equipment for farm, shop and domestic use, is a heavy consumer of paint, much of it for dipping purposes. On the ground and catering to this demand is the Moline Paint Mfg. Company, of which C. P. Skinner is head.

Charles P. Skinner, President

In 1908 the J. C. Scott Paint Company, a Freeport concern of some years standing, removed to Moline. Mr. Skinner became associated with it as trade manager. In April, 1910, interests of the stockholders of the firm were purchased and the present company incorporated with $15,000 capital.

From the first the present company has supplied large quantities of paste paints to the big implement-making concerns of the vicinity, being able, because of favorable location, to keep in close touch with their needs and to give prompt service. Quantity production in this particular line was also of great advantage in meeting competition.

During the last five years the making of house paints has been given increasing attention, and with results that are highly satisfactory. A large percentage of the firm's business is now done in this line, with sales covering an ever widening field.

Direct distribution to the consumer is contemplated in plans that are well advanced at the time this is written. This method, with the return of normal business conditions, is expected to result in a very material increase in output and the expansion of the concern's facilities.

W. C. Skinner, Secretary and Manager

Officers of the Moline Paint Company are:

President—Charles P. Skinner.
Vice-President—M. C. Skinner.
Secretary and Manager—W. C. Skinner.
Treasurer—Charles D. Rosenfield.

The Maehr Company

The Maehr confectionery and bakery is the oldest in point of continuous service in the city of Davenport. It was founded in 1887 by Frank Maehr, a candy maker by trade, and a native of the community. Throughout the years of ceaseless change in methods of manufacturing and selling confectionery goods, the firm has kept abreast of the times and maintained its reputation for the high class of its goods and the efficiency and completeness of its service.

Walter P. Maehr

The first Maehr establishment was located at 323 West Third street. After two years the business of Ed. Brehmer at 110 West Second street was purchased and the premises there occupied. Here Mr. Maehr specialized in the making of cream pie, the excellence of which did much to bring his business into general notice and to build up a lasting patronage.

As the business became well established Mr. Maehr branched out into the manufacture of candies, fitting up the second floor of his building for that purpose. This department has steadily grown, as Maehr candies found favor in an ever widening field.

Four of the five sons of Mr. Maehr saw service in France during the World War. The fifth, Walter P. Maehr, conducted the business, which he and two of his brothers had taken over in 1916.

Store No. 2, located at 316 West Third street, to which the business was removed in 1919, is one of the best equipped confectioneries in the west. The first floor is used for retailing, and a high class cafe is conducted. The second floor is devoted to the manufacture of bakery goods and candy.

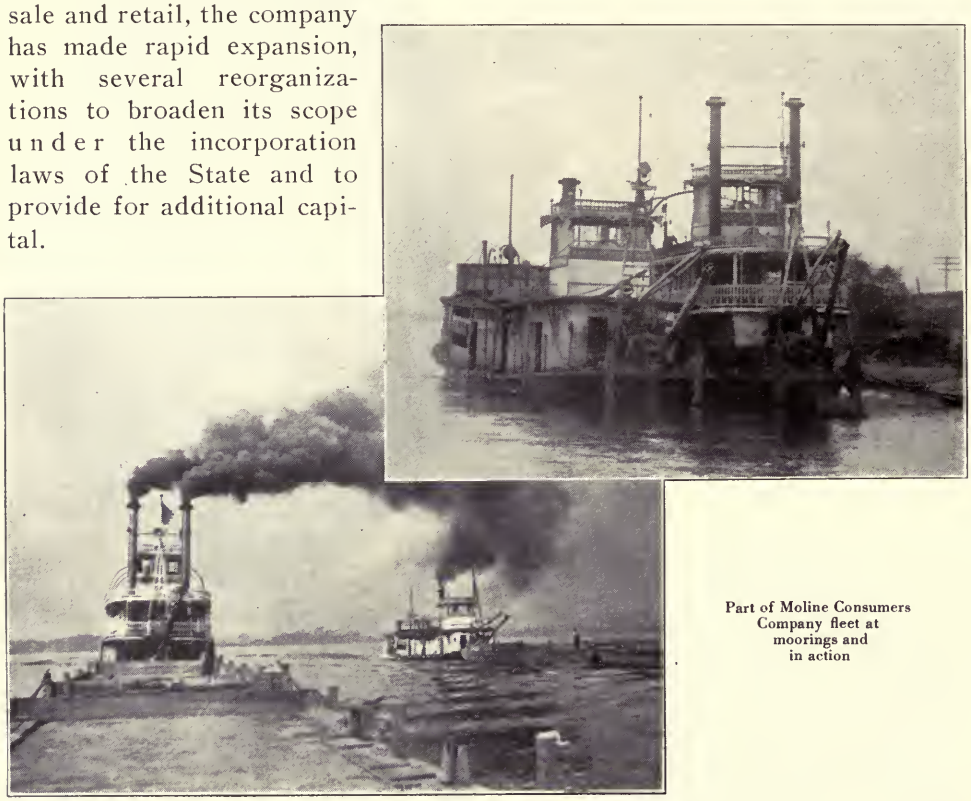
Not only does the Maehr Company make its own candy and bakery goods, but it manufactures ice cream and sherbets. It has its own ice-making plant and laundry, and cooling within the plant is done exclusively by means of brine coils.

The business in August, 1922, was again being managed by Walter P. Maehr, formerly with the Terrace Gardens, and now president of the company.

The Moline Consumers Company

Thirty-one years ago the Moline Consumers Company, which now deals extensively in sand, gravel, cement, ice and coal, had its origin in the Channel Ice Company. Two years later, in 1893, James P. Pearson purchased a half interest in the business and assumed the management, which he retains at the present time.

Formed in the first place to harvest, store and dispose of ice at wholesale and retail, the company has made rapid expansion, with several reorganizations to broaden its scope under the incorporation laws of the State and to provide for additional capital.



Part of Moline Consumers Company fleet at moorings and in action

The first change of name took place in 1898, when the company was incorporated as the Moline Channel Ice Company, with Mr. Pearson president and manager. In 1903 the concern branched out into the coal and building-material field. Among the building materials were sand and gravel, to handle which it was necessary to operate boats and barges. To run the boats to best advantage, the company went into the handling of freight and excursions. Since the original charter was not drawn to include all these activities, a new company, the Moline Sand Company, was formed with capital of $100,000, taken from the surplus earnings of the Moline Channel Ice Company.

The two companies being inter-dependent to a great extent, the problem of accounting became a difficult one, and it was finally decided to consolidate them under a new and broader charter, which was done in 1917.

The present name was then adopted, the capital fixed at $200,000, and the present officers chosen, as follows:

President—James P. Pearson.
Vice-President—G. A. Shallberg.
Secretary—Charles C. Loptien.
Assistant Secretary and Treasurer—Oscar W. Ellis.

The properties of the company include a sand and gravel screening plant, located between Twenty-fourth and Twenty-fifth streets, on the river bank at Moline, and one at Ottawa, Illinois. The home plant gets its raw material from a pit about thirty miles up the Mississippi. Transportation is by water,

James P. Pearson, President

the company maintaining two steamboats, pump boats and twelve barges. The plant at Ottawa was acquired in 1916, and includes a large tract of land underlaid with some of the best gravel in Illinois. The Moline plant has a capacity of 700 tons a day, and that at Ottawa of 800 tons. Both are well supplied with rail shipping facilities.

The Moline Consumers Company has reached its present position of financial security through able business management and satisfactory and consistent public service. Its total business runs into large figures.

Over fifty thousand barrels of cement, in addition to a great quantity of brick, lime and other building materials, are now handled annually.

The wholesale and retail coal business in 1920 totaled 24,000 tons.

Fifty thousand tons of ice were harvested in the winter of 1921-22, being stored in the company's houses and disposed of through various channels, half of it being used by the Rock Island road in the icing of refrigerator and dining cars.

The Rock Island Southern

Offering freight and passenger service between the Tri-Cities and points directly south, the Rock Island Southern Railway Company connects three county seats and taps a territory rich in agricultural resources. Along its line are to be found coal mines, brick yards, gravel and sand plants and commercialized shale and clay deposits, as well as modern grain elevators and adequate stock yards and station shipping facilities. Through the Rock Island Southern Railroad Company it has access to Galesburg. At the south it connects with the C. B. & Q., the A. T. & S. F. and M. & St. L., at the north with the C. R. I. & P., C. B. & Q., C. M. & St. P., and D. R. I. & N. W., and at Gilchrist, midway between the two termini, with the C. B. & Q. So situated, it stands foremost as a short line railroad in handling diversified traffic to the benefit of the entire population tributary to the territory it serves.

The Galesburg-Monmouth line was built in 1907. It is electrically operated, with power station at Cameron. The Monmouth-Rock Island line was built in 1908, connecting at Southern junction with the C. R. I. & P., whose tracks were used to reach the northern terminus. Recently the company took over this road and now operates it exclusively, together with the Sherrard and Cable branches.

Originally the Monmouth-Rock Island line used electricity as its motive power, but in 1920 it was transformed into a steam road.

Snider, Walsh & Hynes

Nearly fifty years of service is the record of the above insurance, real estate and surety bond firm. Established in 1874, by the late W. H. Snider, the agency has ever maintained close relations with Davenport's manufacturing, merchantile and home interests.

Eugene Walsh and John Hynes have been members since 1915, and both are active, not only in their own business but in everything that looks toward the advancement of the community.

Modern Woodmen of America

On the evening of January 5, 1883, at Lyons, Iowa, Modern Woodmen of America came into existence as a fraternal beneficiary society. That was the beginning of what is now the world's largest institution of its kind, furnishing life insurance protection coupled with fraternal activities. The name, Modern Woodmen of America, was selected by the founder after listening to a sermon in which reference was made to "woodmen clearing away the forest"—suggesting useful employment, honorable labor, and practical accomplishment. A charter was granted by the state of Illinois, May 5, 1884, its business then being confined to six central states. In 40 years'

Modern Woodmen Head Offices

development the organization has been extended to every state of the union except two, as well as four provinces of western Canada. The fact that the present fundamental law, adopted in the beginning, contemplated and comprised a thoroughly representative form of government in which all members of the organization have a voice, has contributed largely to the success and popularity of the institution. The fact, also, that its ritual does not interfere with a person's religious or political belief likewise contributes to the unanimity and harmony of its members. No similar organization has equalled or excelled its record of progress and growth. It now has an enrollment in over 14,000 local camps of 1,060,000 members, carrying insurance aggregating $1,606,250,000.

Its financial record includes payment since organization to date of more than 160,000 death claims, covering disbursements to beneficiaries of more than $278,000,000. Its invested surplus funds on March 1, 1923, aggregated

over $26,000,000, this record entitling it to be classed as one of the strong financial institutions of the age.

On September 30, 1897, the head office of the organization was located in Rock Island. Its main building was completed for occupancy January 11, 1899, followed by the erection of an annex of similar size in 1905. Both of these buildings are owned and occupied exclusively by the Society in handling its vast volume of business.

The main office building and annex contain the offices of Head Clerk J. G. Ray and his force of 200 employees; the offices of General Attorney Truman Plantz; Supreme Medical Directors E. A. Anderson and B. E. Jones; Investment Department Manager A. N. Bort; Executive Council chamber, and private offices of the Head Consul, Head Banker and Directors.

The general office of A. R. Talbot, Head Consul, is maintained at Lincoln, Nebraska. He is the chief executive officer of the society and as such has complete direction of the field forces and organization and promotion work. Head Clerk J. G. Ray, of Rock Island, is the chief administrative officer, through whose office is transacted all of the financial, accounting and administrative work of the organization, involving annual cash receipts of approximately $26,500,000, and disbursements on account of death claims, averaging 800 monthly, representing about $1,500,000. The Board of Directors has charge of the financial management of the Society, and, together with the Head Consul and Head Clerk, comprise the Executive Council, or governing body of the institution. This Board consists of John D. Volz, Chairman, Indianapolis, Indiana; E. E. Murphy, Leavenworth, Kansas; R. R. Smith, Kansas City, Missouri; S. S. Tanner, Minier, Illinois; F. R. Korns, Des Moines, Iowa; E. J. Bullard, Detroit, Michigan; and F. B. Easterly, Denver, Colorado.

The Publication building, originally erected in 1908, was doubled in size through the addition of an annex in the latter part of the year 1922. The official magazine, with a monthly circulation of over 1,080,000 copies, the mailing-list and printing departments, under the supervision of Editor John F. Harris, require a force of approximately 150 employees.

Publication Building

Modern Woodmen of America has always been a patriotic society. It waived nonliability in the Spanish-American war of 1898, and paid the claims of all soldier members who lost their lives in that conflict, and this same action was taken during the World war of 1914-18.

EXECUTIVE COUNCIL—MODERN WOODMEN OF AMERICA

Top Row—E. J. Bullard. F. B. Easterly. R. R. Smith. F. R. Korns. Bottom Row—J. D. Volz. J. G. Ray. A. R. Talbot. S. S. Tanner. E. E. Murphy.

In addition to maintaining local camps or lodges, it has developed one of the greatest semimilitary organizations in its Foresters, or uniformed drill teams, which feature is of special interest to young men.

Modern Woodmen of America was the first of the great American fraternal beneficiary institutions to recognize and act upon the belief that it is the duty and privilege of a fraternal society to save lives as well as to pay death benefits; that it is more beneficial to its membership and to society at large to expend thousands or hundreds of thousands of dollars in saving the lives of members, than to pay unavoidable early losses running into the millions. Recognizing that pulmonary tuberculosis was a leading cause of death in this country, it not only joined as pioneers in the crusade devoted to educating the people on preventive measures against the disease, but it established an institution to take care of Modern Woodmen suffering

Sanatorium for treatment of tuberculosis, near Colorado Springs, Colo.

from it. And so, on January 1, 1909, the great Modern Woodmen of America Sanatorium was established and opened at the foot of Mount Cedar, in the Pikes Peak range, a few miles north of the Garden of the Gods, in the Colorado Springs region. Here, at Woodmen, Colorado, was established that which has been developed into one of the greatest life-saving institutions in the world, where members of Modern Woodmen of America afflicted with tuberculosis are treated and cared for free of charge. Here more than 6,000 patients have been admitted, and the percentage of cures, improvements, and arrests of the disease equals almost 60 per cent. Its daily capacity is 240 patients. Aside from a modest sum realized from voluntary contributions by its members, this Sanatorium, which has a property value of more than $1,500,000 in its present highly developed form and perfected equipment, has been built and is maintained from the General fund of the Society, to which each member contributes for that purpose not to exceed 5 cents per month.

Crane Co.

On the fourth day of July, 1855, Mr. R. T. Crane made the first casting in a little frame building in Chicago which started a business that has developed steadily until today Crane Co. stands a leader in its specialized

Davenport Branch of Crane Co.

field of power plant piping, sanitation and heating equipment, with branch houses, warehouses, sales offices, exhibit rooms, and manufacturing plants in 140 cities throughout the world.

The complete Crane line consists of many thousands of articles, such as valves, pipe fittings and steam specialties used in piping equipment for steam, water, gas, air, oil, chemicals, ammonia—in fact "anything for any pipe line." In addition to these products the Crane line includes sanitation and heating materials for buildings of all kinds and sizes.

The completeness of the Crane line, coupled with the company's high standard of business ethics, and the maintaining of manufacturing facilities to meet the growing demands of the trade, have brought Crane goods into world-wide use.

The Davenport branch was established in 1912, and, like other Crane branches, is prepared to serve its surrounding territory with everything required for the piping and sanitation equipment of industrial, commercial and private enterprises.

An added feature of the Davenport branch is a beautiful exhibit room on the first floor equipped with a representative line of Crane products, and maintained for the convenience of architects, engineers, dealers, and prospective builders. A cordial welcome awaits the visitor.

The Purity Oats Company

With 250 employes, a factory payroll of $200,000 annually and an investment in Davenport of one and one-half millions of dollars, the Purity Oats Company is one of the substantial industries of the Tri-Cities. Its output is distributed all over the United States, and large quantities are exported, especially to Europe.

Nine thousand carloads of manufactured goods are shipped annually, when working to capacity. In addition to oat products, stock, poultry and other feeds are made. The capacity is 1,200 barrels of rolled oats, 225 barrels of corn meal and 300 tons of feed a day.

The Purity Oats Company started in business in Keokuk, Iowa, in 1909. From the first it put an improved product on the market. It had a better system of removing all the hull and it originated the "toasty nut flavor," which is still a distinctive feature of its rolled oats. It also was the first to pack its goods in the cylindrical pasteboard container, or "can," which is proof against weevils and makes it possible for a merchant to carry a stock for months without deterioration.

The Davenport plant was opened in 1913, with 500 barrels daily capacity. In 1909 the company became affiliated with the American Hominy Company and the factory was enlarged to its present size.

The American Hominy Company is the largest manufacturer of corn cereals, such as corn meal and cracked and flake hominy, in the world. It has eight plants, five handling corn, one wheat and two oats, the second oatmeal factory being the one at Keokuk.

The Davenport Clearing House Association

(By Albert J. Jansen)

The Davenport Clearing House Association was organized in 1895, the first actual business being the exchange of checks on Tuesday, September 3, of that year. Before the association was formed the banks were compelled to spend an unnecessary amount of time on certain work, such as the routine business of exchanging checks drawn by the customers of the various banks on other banks in the city. Through the association this was done in a much more satisfactory manner, the clerks of the different banks meeting at the Clearing House daily.

The association also immediately proved of value in the financial transactions of the city and county treasurer, which from that time have been managed by all the banks, acting together.

First officers of the association were: President, F. H. Griggs; vice president, I. H. Sears; secretary and manager, Charles Pasche.

The first president and vice president served for five years, and the manager one year. During the entire history of the association the managers have changed every year, because the office of the association rotated from one bank to another and the cashier or other official of the bank used as headquarters has been chosen as manager.

The Clearing House Association has a very gratifying record to look back upon, for during the 28 years that it has been in existence the banks of Davenport have been more and more looked upon as leaders in conservative and yet progressive banking. The high standing which our banks hold through the state of Iowa and surrounding states is proverbial. No depositor in one of them ever has lost a penny.

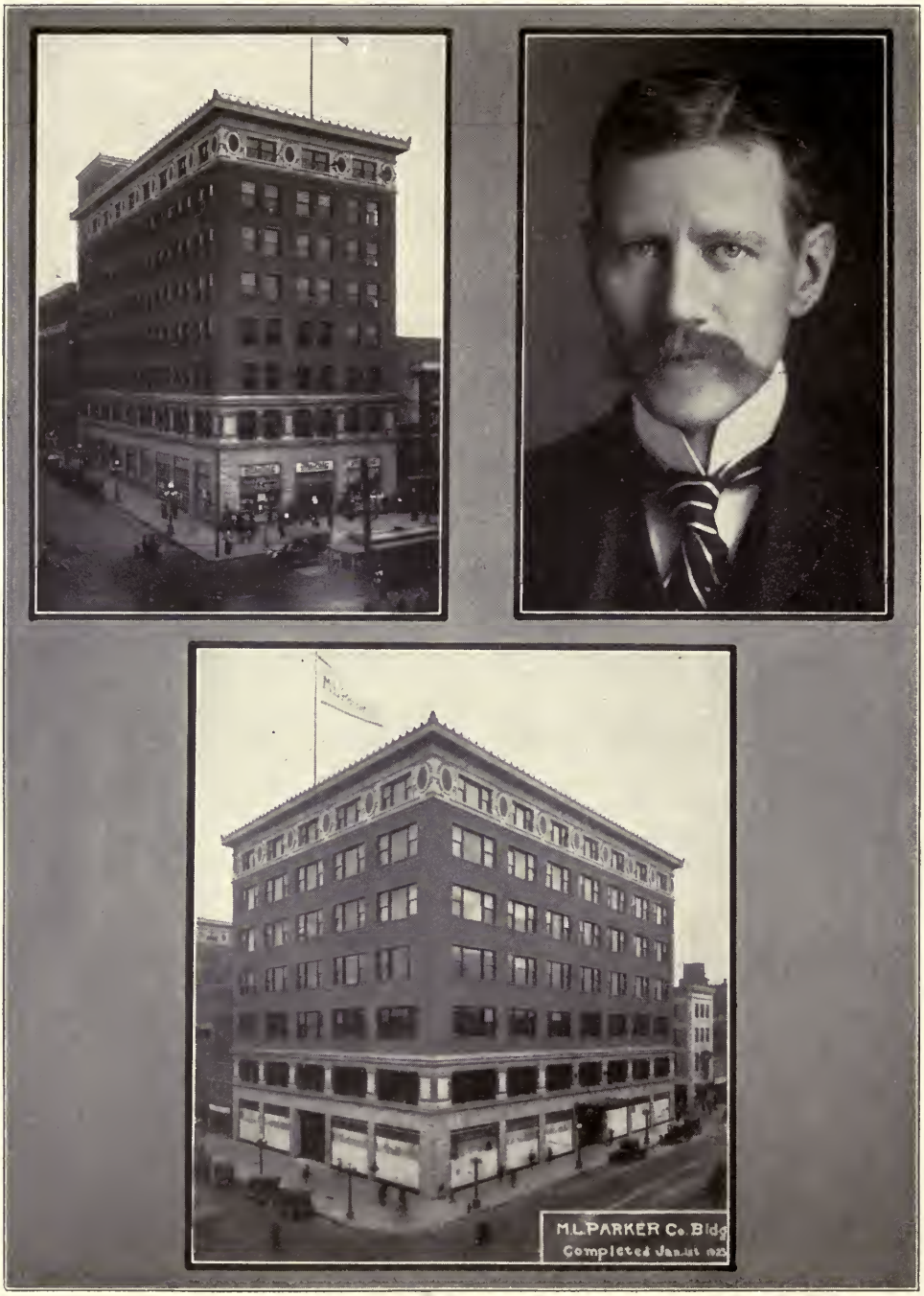
During the war, when the government found it necessary to raise enormous sums of money, the Clearing House was useful for the purpose of getting the subscriptions for Liberty loans and to enable the people of the community to pay the amount subscribed in a convenient way.

The effectiveness of this organization had much to do with the fact that while Scott county was expected to subscribe $16,000,000 for the five Liberty loans issued, it actually did subscribe $22,000,000 and the total number of subscribers was over 90,000. During this period, and after the war, when the government issued certificates of indebtedness running for a short time, the Clearing House did its best to help secure the necessary funds.

The eight banks affiliating with the association are the First National, American Commercial & Savings, Davenport Savings, Scott County Savings, Iowa National, Union Savings, Citizens Trust & Savings, and Security Savings. There are in the city besides four non-member banks.

Present officers of the association are: President, E. J. Dougherty; vice president, I. J. Green; secretary and manager, Herman Oetzman.

A Davenport Builder and Some of His Work



Upper left, Putnam building. Upper right, W. C. Putnam. Below, Department Store building.

W. C. Putnam Estate

One of the noteworthy blocks of buildings through the whole history of Davenport has been that on the north side of Second street between Brady and Main. When Antoine LeClaire laid out his first addition in 1839, he built at the corner of Second and Main the LeClaire House, famous all through the pioneer days. He extended the buildings on to Brady street, the stores being known as LeClaire Row and the public hall as LeClaire Hall. Later on the hotel was known as the Newcomb House and the stores as Velie Block.

W. C. Putnam bought the property in 1895, borrowing money to do so. Mr. Putnam, who had managed the property for the owners, as his father had done before him, knew its possibilities. He also had confidence in the city, and immediately began improving and developing the property.

When Mr. Putnam died, in 1906, he left his entire estate in trust for the benefit of the Davenport Academy of Sciences, subject to certain reasonable payments to his brothers and sister in lieu of their statutory fees as trustees and to a life interest in the homestead to his sister. In addition he left for the institution his art collections and his art, history and science library.

The institution selected as the beneficiary of the estate was founded by a group of scientific men back in 1867. It has had an interesting history, building up scientific collections, conducting explorations, especially of "mounds," publishing proceedings, bringing lecturers to the city, cooperating with schools in advancing scientific education, and carrying on various activities in the fields of science, history and art. Instead of a group of scientific men, it has developed into a public museum.

In order that the institution should have an assured income for the future, Mr. Putnam made his gift in the form of a permanent trust fund, the principal of which must remain intact, only the income being at any time available. The bulk of the trust fund was invested in the half block already described, in the center of the business district of Davenport. On this property there still remained a considerable portion of the loan Mr. Putnam made for its purchase. Mr. Putnam directed that the half block should not be sold by the trustees but that the old buildings should be replaced by modern fireproof structures. This the trustees have been doing as rapidly as the situation warranted. In 1910 an eight-story office building was put up at the corner of Second and Main streets and in 1922 a corresponding department store building at the corner of Second and Brady. By the time the remaining center portion of the property is rebuilt and the necessary building loans retired, the trust will produce a large annual income for the museum and art gallery.

The Photo Art Engraving & Electrotyping Company

With a few exceptions, the half tones printed in this book illustrating the story of Rock Island Arsenal and of the Tri-Cities and their commercial and industrial institutions, are the work of the Photo Art Engraving & Electrotyping Company. This concern also made many of the photographs, retouched others, arranged the groupings and did other art work connected with the publication.

Lynn H. Ewing

Established originally to specialize in newspaper photography, zinc etchings and halftones, the company has rapidly expanded to include all branches of commercial photo engraving and creative art in the preparation of catalogue and magazine illustrations and color plates. It found in the Tri-Cities a fine field for its activities. When it began doing business in 1910 all art and photo engravings produced for Tri-City concerns was sent to other cities. Now comparatively little is done elsewhere. Prompt, dependable and efficient service tells the story. The advantage of having work of this sort done at home, where it can be closely supervised by patrons, is obvious.

Much of the business of the Photo Art company originates with the big implement, automobile and other local industrial concerns. In the last decade there has been a vast increase in the use of pictures to sell goods, and color work is being more and more employed because of the realistic effects that are possible with the progressive improvement of the art of the photo engraver and printer.

The Photo Art Engraving Company first occupied a small shop at 1517, Second avenue, Rock Island. In 1912 it removed to 2010 Third avenue, where it had more room and where, the following year, an electrotype foundry was installed. In 1917 Lynn H. Ewing, present head of the concern, who was secretary of the original company, purchased the controlling interest and the name was changed to the present form.

Crowded for room for the third time, the company in 1920 removed to 1532 Third avenue, Moline, where it has 10,000 feet of floor space and its capacity has been increased until it now employs a force of 24 men.

Seaman Paper Company of Minnesota, Inc.

Twenty years ago Ben F. Newhouse, then representing the Seaman Paper Company of Chicago, made his first trip into the Tri-City territory. Ever alert to find opportunities for marketing the products of the large concern with which he was affiliated, he quickly formed a true estimate of the present buying power and future possibilities of Rock Island, Moline and Davenport and surrounding territory, with the result that he then and there resolved to give close personal attention to supplying the paper needs of this particular field. This he has done throughout the intervening years, and even now, despite the fact that eight years ago he incorporated the Seaman unit in Minnesota, now known as the Seaman Paper Company of Minnesota, he still makes his regular trips to this locality. Even though the Tri-Cities are not in the Minneapolis territory, Mr. Newhouse finds much pleasure in returning periodically to his many business friends here, taking care of their ever-increasing needs for the kind of paper distributed by Seaman.

The Seaman organization consists of five major corporations, with headquarters in Chicago, New York, Minneapolis, Detroit and St. Louis. These five units control branches located in Milwaukee, Cincinnati, Cleveland, Toledo, Buffalo, Philadelphia, Boston, Kansas City, Nashville, New Orleans, St. Paul and Des Moines.

A number of the country's largest paper mills, with an output aggregating almost two and one-half millions of pounds daily, depend upon the Seaman organization for the absorption of their tremendous tonnage. More than thirty national magazines depend upon Seaman for their paper, not forgetting, of course, the thousands of printers and newspapers which also find in the Seaman organization a trustworthy source of supply.

During the World War Seaman took a leading part in supplying the government with paper for the targets made at Rock Island Arsenal and distributed to all army cantonments in this country. A special quality of paper was used for this purpose and many carloads of it were delivered at the Arsenal. The paper handled by this organization includes all grades and adapted to all purposes for which paper is used.

Consumption of paper in the Tri-City district has made a remarkable increase in the years since Mr. Newhouse secured his first order in that field. It is a tribute to his ability, integrity and enterprise, as well as to the high class of the product which he distributes, that the Seaman organization has more than held its own in the competition for the privilege of supplying this market.

Davenport's Leading Hotels

Citizens, statesmen and representatives of the United States Government, when visiting Rock Island Arsenal, either for business or for pleasure, always voice their praise for the splendid hotel accommodations offered by the Tri-Cities' leading hotels. Hotel Blackhawk is a model fireproof building containing 400 guest rooms, each equipped with private bath, toilet, and circulating ice water and with servidor service, also offering a fine cafe and coffee shop. Hotel Davenport has 155 fireproof rooms, about 100 of which have private bath. The Davenport Grille is also a popular eating place. These splendid hotels are operated by the Miller Hotel Company, an Iowa concern, also operating Hotels Fort Des Moines and Savery, in Des Moines, and the Hotel Hanford, at Mason City.

Hotel Blackhawk, Davenport

The catering facilities of Hotel Blackhawk are equal, if not superior, to those of any hotel in the country, and its large lounge, Mezzanine floor and ball room have furnished a magnificent setting for many charming social affairs held in Davenport.

The high standard of hotel service and cuisine maintained in the Miller hotels sets a pace for quality, and the hotels operated by this company are easily among the most "talked of" and certainly the best "thought of" hotels in the country. Residents in the Tri-Cities are mighty proud of these hotels and take pride in recommending them to their friends, and it naturally follows that visitors look forward with delight to their sojourn at Hotel Blackhawk and Hotel Davenport, because they are clean, wholesome and well managed. These hotels are finding increasing favor with automobile parties, especially those on week-end outings from Chicago and other large centers, who come to visit Rock Island Arsenal and other local attractions.

Hotel Davenport, Davenport

The Don Sales Company

Distributors for the Reo line in sixteen Illinois and Iowa counties, the Don Sales Company is one of the largest automobile agencies in the Tri-City community, maintaining establishments in Rock Island, Ill., and Cedar Rapids, Iowa.

Elbert G. Don

Elbert G. Don, founder of the concern, is a son of the late David Don, a pioneer Rock Island merchant, who dealt in hardware, stoves, etc., and who retired in 1908, after an honorable career of half a century as a retailer. The son was one of the first in Rock Island to make the selling of automobiles a business, and his was the first salesroom in the city. He has been in the game since 1909, having handled several standard makes of cars. For more than a decade he has been in business for himself, latterly on Fourth avenue between Seventeenth and Eighteenth streets, where in 1920 he purchased the Fred Sauermann building, which is the company's present home.

Arno J. Tremann

The Reo agency was secured in 1916. The Don Sales Company was formed in 1917, Arno J. Tremann, also a member of an old Rock Island family, becoming interested. The Cedar Rapids branch, which was opened in 1919, is in charge of Mr. Tremann.

The Como Hotel

Under the management of L. V. E. Moore, who became its proprietor in 1921, the Como Hotel, Eighteenth street and Third avenue, Rock Island, has acquired a reputation for good service at reasonable rates which has brought it into high favor with transients visiting the Tri-Cities. The Como has 105 rooms. It is modern, and conveniently located.

The Eckman Studio

A number of the best illustrations in this book are products of the Eckman Studio, located in the Fort Armstrong theatre building, Rock Island. Quarters it occupies were especially planned for Mr. Eckman at the time the building was constructed and are thoroughly modern, as well as centrally located.

John Eckman, Photographic Artist

Studio

The Rock Island Sand and Gravel Company

The Rock Island Sand & Gravel Company was organized and received a certificate of incorporation from the Secretary of State of Illinois on April 17th, 1902, to conduct a business for the production of sand and gravel, and to deal in mason supplies and coal. They started out with a small pump boat and towing boat combined and several small barges. In 1906 a larger boat was necessary, and from year to year new and larger barges were built. In 1910 a locomotive crane was installed on the levee between Nineteenth and Twentieth streets and hoppers and concrete wall were built to facilitate the handling of their products.

The increased demand for screened and washed sand and gravel justified this company installing a washing and screening plant, which plant was built in the spring of 1922, at Mill street and Twenty-first avenue, Rock Island. This plant has a capacity of 1000 tons per day.

The officers of this company are Chas. J. Larkin, president, George H. Richmond, vice-president; Wm. M. McConochie, treasurer; and H. J. Larkin, secretary and general manager.

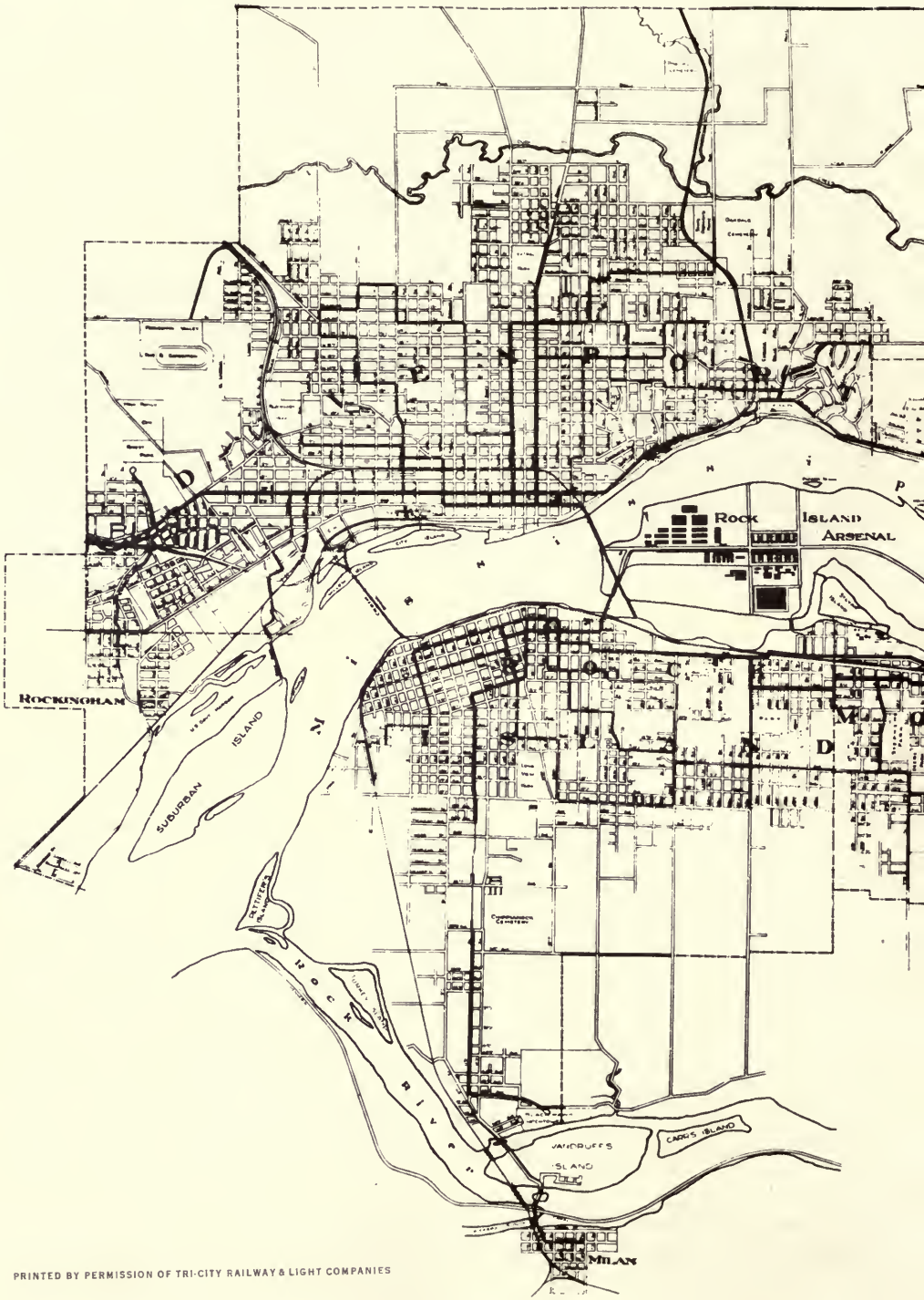
Mercy Hospital, Davenport

The Catholic Messenger

The Catholic Messenger was established in Davenport, Iowa, in 1882, by the late Thomas L. Sharon. After his death in 1888 the management was assumed by his brother, Fred B. Sharon, who is still in charge as publisher. The Messenger is the official organ of the Catholic Diocese of Davenport and of its Bishop, Rt. Rev. James Davis. For many years after its founding it was the only Catholic paper published in Iowa. It maintains all departments necessary for a first-class family newspaper. It covers besides all the world's news affecting the church, Catholic activities in the social, political, economic and industrial fields.

The Messenger is affiliated with the National Catholic Welfare Council and uses its extensive news service, through which it obtains the latest and most reliable news of the church throughout the world, gathered by its efficient correspondents. The Messenger is also a member of the Catholic Press Association. It is published weekly at a subscription rate of $2.50 per year.

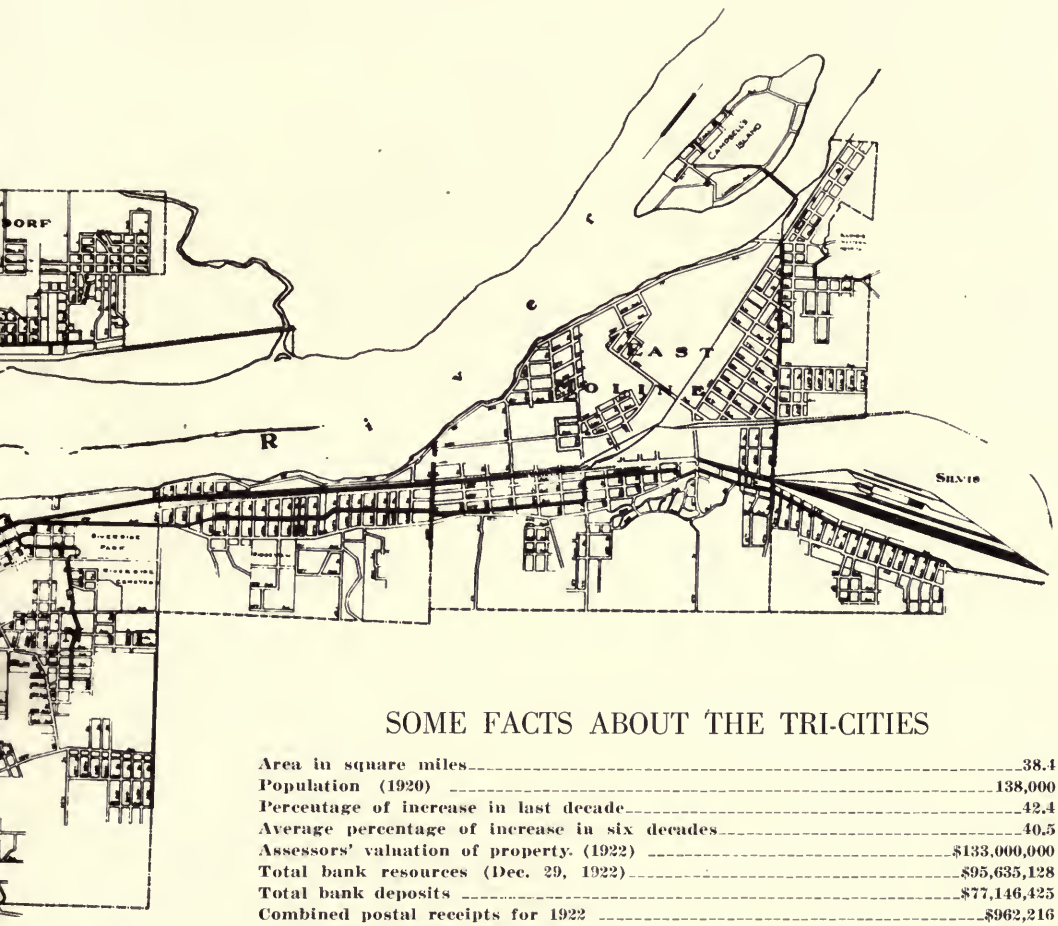
The present staff of the Messenger consists of Fred B. Sharon, publisher; E. M. Sharon, editor; M. E. Sharon, city editor, and C. L. Stebbins, advertising manager.



PRINTED BY PERMISSION OF TRI-CITY RAILWAY & LIGHT COMPANIES

Map of Tri-City Community

Showing central location of Rock Island Arsenal with reference to the cities of Rock Island, Davenport, Moline, East Moline, Bettendorf and suburban territory.



SOME FACTS ABOUT THE TRI-CITIES

Area in square miles	38.4
Population (1920)	138,000
Percentage of increase in last decade	42.4
Average percentage of increase in six decades	40.5
Assessors' valuation of property. (1922)	$133,000,000
Total bank resources (Dec. 29, 1922)	$95,635,128
Total bank deposits	$77,146,425
Combined postal receipts for 1922	$962,216
Approximate number of industries	350
Number of industrial workers	20,000
Capital invested in industry	$225,000,000
Number of homes	30,000
Number of owned homes	20,000
Percentage of native born whites	78
Miles of paved streets	261
Miles of railroad tracks in city limits	256
Carload lots of freight received and forwarded in 1922	84,524
Miles of municipal frontage on navigable water	16

Largest center between Chicago and Omaha, St. Louis and Twin-Cities.

Main eastern gateway to Iowa and western gateway to northern Illinois.

Served by three great railroad systems and eight branches, and by two waterways.

Vast waterpower available in Mississippi and Rock rivers, and coal deposits near at hand.

Greatest agricultural implement manufacturing center in the world, and products of a score of Tri-City industries are marketed abroad.

City of Rock Island

Population (1920 census)—35,177.
Area—ten square miles.
Total banking resources (Dec. 29, 1922)—$17,915,569.
Postal receipts (1922)—$259,684.
Miles of streets—127.
Miles of pavement—67.
Miles of sewers—53.
Miles of water mains—56.
Miles of street railway tracks—28.7.
Miles of main line railroad tracks—13.2.
Miles of other railroad tracks—33.7.
Number of homes in city—7,910.
Number of owned homes—4,336.
Acreage of parks—83.5.
Assessed valuation of property (1922)—$12,417,875.
Municipal appropriations for fiscal year 1922—$315,751.
Bonded indebtedness of municipality (close of 1922)—$82,000.
Served by main lines of three railroad systems, C. R. I. & P., C. B. & Q. and C. M. & St. P.
Has four-mile frontage on navigable stream and water freight outlets south and east.
Midway between Chicago on east, and Des Moines on west, Twin-Cities on north and St. Louis on south.
Elevation above sea level—585 feet.
Percentage of population native born whites 78.1.
Seat of most densely populated county in state except Cook.
One of four adjoining cities with combined population of 150,000.

ROCK ISLAND is a healthy, growing American city of 35,000 souls. Its location and general facilities are ideal for purposes of commerce and industry. Its social advantages are such as men everywhere are seeking. Its scenic features are unexcelled in the upper Mississippi valley. Its past is rich in historic lore. Its present is full of throbbing human interest. Its future holds a promise than which none is more bright.

As part of a community composed of four adjoining cities which, with their suburbs, have a combined population of 150,000, it is able to offer inducements not found outside of the larger centers.

In presenting Rock Island's points of excellence it is not necessary to indulge in extravagant statements. Its people are content to rest their cause on a plain recital of the facts. Facts also give a basis for comparison much more satisfactory than any free-hand sketch could offer.

Rock Island occupies a point of land formed by the junction of Rock river with the Mississippi. On the north and west it has a frontage of more than four miles on navigable water. Rock river is on the south and Moline on the east. Across the Mississippi at the north is Davenport. Lying opposite the east half of the city is the island from which its name was taken and which is occupied by the greatest Arsenal and military storehouses in the world. Here is assembled the largest amount of government property anywhere in the United States outside of Washington, D. C. The official inventory shows a value of more than $350,000,000.

On the banks of the river are the main lines and terminals of three great railroad systems, having belt line connections with all parts of the business and industrial sections of the city, and, with the several branches centering here, giving unexcelled transportation service in all directions.

The country round about is rich in agricultural resources and highly developed. A number of permanent highways giving access to it already have been built and an aggressive policy of improvement is being pursued.

The Mississippi and its navigable tributaries offer the advantages of water transportation, while the Illinois and Mississippi canal, otherwise known as the Hennepin, connecting with the latter stream just south of the mouth of Rock River, opens a way east to the Great Lakes for water-borne freight. The Mississippi at this point is spanned by two bridges, one used exclusively by two railroad systems and the other a combination two-deck, double-track structure, the largest in point of carrying capacity north of St. Louis.

Rock Island has a population, according to the 1920 census, of 35,177, an increase over 1910 of 10,842, or 44.6 per cent. The average increase by decades in the last 70 years has been 61.5 per cent, with a minimum of 16.9 and a maximum of 199.8 per cent, shown in 1860. The city is the seat of government of Rock Island county, having a population of 92,297 and averaging 217 people to the square mile, a density of population not equalled in the state outside of Cook county. The adjoining counties of Whiteside, Henry and Mercer, together with Rock Island, have a total population of 192,433, an increase in the ten years prior to 1920 of 11 per cent. Rock Island county's increase from 1910 to 1920 was 31.1 per cent and its average increase by decades over a period of 30 years has been 30 per cent.

Twenty million people live within a radius of 300 miles of Rock Island.

There is no more accurate index of a city's greatness than the record of its postal receipts. In Rock Island's case a vigorous and steady growth is indicated. The totals, taken approximately for five-year periods from 1889, are as follows:

1889	$ 23,376
1895	28,936
1900	64,894
1905	80,523
1910	143,804
1915	158,716
1920	240,919
1922	259,684

Increase in business and resources of the six banks of Rock Island also testifies to the city's expansion in commercial and industrial lines. This was only slightly affected by the war and was not materially reduced after its close, as bank statistics for 1913, 1919 and 1922 given below will show:

	Capital Stock	Surplus and Profits	Loans and Investments	Deposits	Total Resources
Feb. 5, 1913	$ 900,000	$ 710,311.80	$ 8,001,306.20	$ 8,767,448.14	$10,563,072.96
March 4, 1919	900,000	978,893.67	12,963,133.43	13,659,043.09	1 ,141,674.73
Dec. 29, 1922	1,000,000	1,147,080.68	15,144,577.80	15,298,762.43	17,915,569.58

Rock Island's area is ten square miles, of which seven and one-half square miles are platted, and two and one-half acre property. Within its

limits there are six parks totaling 83½ acres. One of these, Douglas park, centrally located and city owned, has 12 acres and is dedicated to outdoor sports having a fully-equipped baseball diamond, with 5,000 seating capacity. The parks are well distributed so that people living in all parts of the city may enjoy their use.

Public improvements in Rock Island are up to standard and additions to them are being made at a rate which shows a normal increase year by year. There are 127 miles of streets, of which 67 are paved. Originally most of the paving was of brick, but asphalt has rapidly come into favor in late years. An extensive resurfacing program has been undertaken and is partly completed. The mileage of sidewalks is more than double that of the paved streets. Standard specifications are followed in laying paving and walks and inspection is thorough.

The city has a municipal water plant valued at one and one-half millions of dollars. Raw water from the Mississippi is purified by the most approved processes. The filters, sedimentation and storage basins are located on the bluff, giving the business part of the city on the flat below the benefit of gravity pressure. Pressure for the hill district is provided by a standpipe 125 feet high. The capacity of the plant is 6,000,000 gallons daily and there is abundant room for enlargement. Water rates are unusually low, the minimum meter rate being 70 cents per month, with 14 cents per hundred for the first 10,000 cubic feet each quarter and a graduated scale, water in excess of 40,000 gallons per quarter being furnished for 6 cents per hundred. There is also a flate rate. The waterworks is on a paying basis and practically debt-free. There are 56½ miles of water mains and 53 miles of sewers. Topographical conditions make satisfactory drainage by gravity possible in all parts of the city.

Public utilities give good service at rates comparing favorably with those in other cities of Rock Island's class. Proximity of Moline and Davenport, with unified ownership and management of most utilities, affords marked advantages both in service and cost to patrons. The combined street railway system of the tri-cities long has been accounted one of the very best in the country, and the superior facilities of the electrical and gas plants are attested by the manner in which the World War emergency was met. This community was the only one in the United States, with the single exception of Chicago, where the placing of war orders was not limited on account of an insufficient supply either of gas or power, or both.

The Tri-City Railway company has 28.7 miles of track in Rock Island, and its repair shops and its largest car barns are in the city. Its single fare rate is 10 cents, but identification cards are sold monthly for 50 cents, giving the purchaser the privilege of riding for a nickel.

There are 453 miles of single wire power distribution lines in the city and 200.3 miles of gas mains of 3-inch equivalent. The power rate is 6 cents

per kilowatt hour for the first 50 kilowatt hours per month and a graduated scale down to 1.5 cent for 100,000 or more kilowatt hours per month. The light rate is 8 cents for the first 50 kilowatt hours and 4 cents for all current in excess of 3,050 kilowatt hours per month. The gas rate is $1.30 per thousand for the first 100,000 cubic feet and $1 for all gas used in excess of 500,000 cubic feet per month. The number of electric customers was 8,897 and of gas customers 7,709 at the close of 1922.

The Illinois Bell Telephone company has 6,300 telephones in operation in the city, seventy per cent being residence stations. The residence rate for individual lines is $4 per month and the business rate $8, with free connection with the adjoining cities.

It may be added that the policy of the utility companies always has been progressive, anticipating and encourging expansion of the city. This has been especially true of the Tri-City Railway Company.

Rock Island is served by the main east and west line of the C. R. I. & P., better known as the "Rock Island" road; the Chicago-Kansas City line of the C. M. & St. P., and the main St. Louis-St. Paul line of the C. B. & Q. The first named operates a branch from the city to Peoria, and the Rock Island Southern taps the rich country to the south, reaching Monmouth and Galesburg. Two of the city's railroad terminals are in the business district and the third is within easy reach of it. Railroad tracks, for the most part, occupying the river bank, exceptional facilities for transfer of freight to and from boats are afforded and dangerous crossings are few. There are in the city 13.2 miles of main railroad line and 33.7 miles of other tracks, including yards of the C. R. I. & P., the C. B. & Q. and the Rock Island Southern.

Assessed valuation of property in Rock Island for 1922 was $12,417,875. This is about half of the actual valuation. The 1921 tax rate was $6.74 per hundred dollars. Of this $2.54 was for city and $2.75 for school purposes. The city's bonded indebtedness at the close of 1922 was $82,000, or only about one-eighth of the maximum allowed by law. The school bonded indebtedness was $400,000.

With its location, transportation facilities and other advantages Rock Island offers unexcelled opportunities for commercial and industrial development. It does a brisk business in wholesaling and retailing. Two million people live within a radius of 100 miles. The manufacturing enterprises within its limits number about fifty, with a combined invested capital of more than $15,000,000 and with 3,500 male and 500 female workers, these being the figures for 1922. The output of its factories includes agricultural implements, lumber products, tractors, oil cloth and textiles, stoves, registers and furnaces, hardware and plumbing specialties, structural steel, farm lighting plants, paints, electrical fixtures, men's clothing, rubber footwear,

candies, automobile accessories and pipe organs. These are in addition to the products of Rock Island Arsenal shops, in which many Rock Island workmen are employed. Rock Island has abundant room for factory expansion, with sites level and low in price, reached by street cars from the business district in ten minutes, and on paved streets. Belt line railway service, and in some cases water transportation, is available.

With its neighboring cities, Rock Island shares the advantages of water power afforded by rapids in both the Mississippi and Rock rivers. With a minimum flow of the two streams there is a potential energy of 100,000 horse power, of which little more than one-tenth has been developed. Possibilities in this direction greatly enhance the industrial prestige of the community. Large quantities of fuel within a radius of 60 miles make practical location of auxiliary power plants at the mines, with economical electrical transmission. Coal in commercial quantities is mined near enough to be delivered by truck, while three railroad lines bring supplies from the great bituminous fields of central and southern Illinois.

Labor conditions, from the standpoint of both employer and employe, are exceptionally good. Diversity of industry gives a variety of training, and skilled workmen are available for nearly all standard lines of manufacturing. What Rock Island happens to lack usually may be found in adjoining cities. On the other hand, the worker failing to find a job at his trade in Rock Island may secure one within easy reach in one of the other municipalities, and so unemployment is materially lessened. There has been a marked freedom from serious labor troubles, wages compare favorably with those elsewhere, and the cost of living is below the average in communities offering equal advantages. The Tri-City Federation of Labor, with an affiliating membership of between seven and eight thousand, including 63 unions, maintains headquarters in Rock Island. There is no predominating foreign element in the city. Eighty-two and six-tenths per cent of the people are native born, and of the others northern European strains form a large majority.

In the distribution of its many fine homes Rock Island is unusually democratic. It has no exclusive residence district, perhaps because there is no one part of the city preeminently favored for that purpose. There are so many good locations and builders of the better class of houses have made their own selections according to individual tastes. Latterly there has been a disposition to favor the bluffs, of which there are several miles overlooking the Mississippi and Rock river valleys. Exceptional opportunities for landscaping are afforded, with the option of northern, western or southern views of valleys and streams, and wooded hills in the back ground. Most of the city is built on the level bottom land but the hill district is growing rapidly. One may place his home in the valley, on the hillside or on the level upland, 150 feet above the river. He may locate it in the open to get maximum sunshine, or among the natural forest trees, as he elects. A few

sites remain within convenient walking distance of the business center. All residence localities are well served by trolley lines.

In Rock Island the home owning class is in the majority. There are 4,313 rented homes and 4,336 owned, according to a late survey. Of the owned homes 2,347 are free from encumbrance.

Building ordinances enforced for a number of years have checked the tendency to cheapen construction as building costs advanced and a better class of moderate priced homes has resulted. The rate of building has been fairly uniform year after year. In 1922, which was somewhat below normal, 120 new dwellings were erected and the total expenditure for buildings was $1,624,621. There are two building and loan associations in the city and the banks pursue a policy calculated to encourage the construction of homes. Rents range rather lower than in other cities of the same class, the average for an ordinary five-room house being about thirty dollars per month. There are no slum districts in the city.

Rock Island never has been wanting in appreciation of the importance of its public schools. Like most other growing cities, it has had a problem in keeping its school building program up with the increase in juvenile population, but it is believed that a permanent solution now has been reached and that henceforth there will be ample room. Since the World War the people have voted additional revenue to meet the greatly increased cost of building and conducting the schools. Most of the needs of the outlying sections have now been met and means are in sight to provide another large high school. The city schools are conducted under a special charter which gives some advantages not conferred under the general law. School affairs are administered by a non-partisan board of education. School sites have been purchased on favorable terms in districts which were in process of being settled and in other ways the needs of the public have been anticipated so far as was possible.

There are fifteen grade schools, high school and manual arts school in the city's system. Three of the grade schools are departmental. In addition there are half a dozen denominational schools with a combined attendance of more than 700. The recent growth of the public school system is best shown by comparative statistics on attendance and expenditures:

Attendance: 1914—4,440, 1919—4,975, 1922—5,685.

Expenditures: 1914—$292,749, 1919—$303,096, 1922—$396,672.

The public schools employ 181 teachers and the value of school property is placed at $1,296,410, of which $980,179 is in buildings, $172,542 in lands and $115,975 in equipment.

Augustana College is the principal school maintained by the Augustana Lutheran Synod of North America, embracing practically all of the United

States. It occupies thirty-six acres of land at the edge of the bluff in the east end of Rock Island and its buildings and grounds represent a value of nearly a million dollars. Its students number 1,000 men and women and it has graduated an equal number into the ministry.

Villa de Chantal is a girl's boarding and day school, with primary and advanced departments, conducted by the Sisters of the Visitation, a Roman Catholic order. Its students come from many states.

Organizations for the promotion of spiritual welfare are liberally supported in Rock Island. A careful survey indicates a church affiliation of eighty per cent of the population. A healthy interest is maintained in all the auxiliary lines of religious endeavor. There are twenty-five Protestant churches, including practically all denominations, five Roman Catholic churches and three Jewish synagogues. The Y. M. C. A., occupying a fine new home, has a membership of 665 and the Y. W. C. A. a membership of 1,000.

There are a number of benevolent institutions. St. Anthony's hospital, conducted by the Franciscan Sisters of the Immaculate Conception, is a 150-bed institution, and most of it is new and of modern construction and appointment. The West End Settlement is conducted in the industrial district and covers a large field. Bethany Home cares for homeless children, being supported mostly by subscription. The Rescue Mission, similarly financed, relieves the urgent wants of homeless adults, giving them food and shelter free, or at a nominal cost. There is a municipal tuberculosis sanitorium in which patients are treated without charge. A welfare association is maintained by private citizens as a central agency for the dispensing of charity.

Fraternal organizations receive much attention in Rock Island. Masons, with an aggregate membership of 2,000; Odd Fellows, with 700; and Eagles, with 1,200, have homes of their own, while Elks, with 1,000 and Knights of Columbus, with 650, maintain clubrooms and both expect to see plans for new buildings soon realized. Woodmen of the World and Loyal Order of Moose are among other fraternals strongly represented. Veterans of the three wars have active camps.

The city is headquarters for the Modern Woodmen of America, and there are several flourishing local lodges here, one, Camp 26, being the largest in the jurisdiction. Here, also, is the head office of the Woodmen auxiliary, the Royal Neighbors of America. The Modern Woodmen is the largest fraternal organization in the world, and the Royal Neighbors the largest conducted exclusively by women. The two societies employ more than 500 people in their head offices. The Modern Woodmen, with more than 14,000 camps, operates in all states in the union except two, and in four Canadian provinces. It has over one and one-half billions of dollars of insurance in force and its total disbursements to beneficiaries in the forty

years of its existence have amounted to $280,000,000. It has an invested surplus of $26,000,000. The society maintains a tuberculosis sanitorium near Colorado Springs, Colo., with a capacity of 240 patients, which is free to members and is accounted one of the most successful anywhere.

The Royal Neighbors has a membership of nearly half a million; it operates in 45 states and maintains 7,200 local camps. It is on a sound financial basis. In addition to adult and juvenile insurance, it provides a fund for the assistance of members who are temporarily in need. Both Woodmen and Royal Neighbors publish official organs which are given nation-wide circulation to the number of one and one-half million copies monthly.

Business, civic and social organizations are numerous and active. Leading among them is the Rock Island Chamber of Commerce, with a membership of 600, drawn from nearly every field of business and professional activity. A paid secretary and staff of assistants is maintained and the organization is always alert to promote the city's industrial and commercial welfare. Other organizations of the same nature include the Rock Island club, Retail Business Men's association, Industrial commission, Real Estate board, Builder's Exchange, Rotary club, Kiwanis club and Business and Professional Women's club.

Women of Rock Island take an active part in civic affairs and in the promotion of the arts. The chief agency through which they work is the Rock Island Woman's club, with a membership of 1,400. Local and Tri-City organizations from time to time sponsor the appearance of the world's leading instructors and entertainers in music, literature and the drama. The favorite place for such programs is Augustana college gymnasium, with seating capacity of 5,000, remarkable acoustic properties, and centrally located for Tri-City patrons.

Rock Island has two libraries, one public and the other an adjunct of Augustana college. Building of the former was made possible through the generosity of Frederick Weyerhaeuser. The latter was presented to the college as a memorial by the heirs of F. C. A. Denkmann, who, with Mr. Weyerhaeuser, laid in Rock Island the foundation of the great lumber industry which still bears their names. The public library, which was built in 1903, has more than 37,000 volumes and the collection is growing at the rate of several thousand yearly. There are 12,000 card-listed borrowers and the number of books issued for home use in 1922 was 165,621. There are two main branches, one in the West End Settlement and the other in the Washington school, in the southeastern part of the city. Collections of books are also placed in different rooms of the various public schools.

Rock Island's independent recreational facilities are second to none, and they are supplemented by those of its neighboring cities, giving a

range of offerings to suit any taste. It has scenic attractions not excelled in the valley of the upper Mississippi, inviting drives and well kept parks. Of its public parks there are six, with a combined area of 83.5 acres. One of these, Long View park, is held to be one of the best improved and most sightly in the central west. It comprises 40 acres. Then there is Black Hawk's Watch Tower on the high bluff on Rock River, which is one of the historic spots of northern Illinois. Rock Island Arsenal grounds are beautiful and threaded with miles of fine roadways. The Rock Island Arsenal Golf club's course is famous and has been the scene of noted tournaments. There are fine facilities for outdoor bathing in summer and for skating in winter. Fishing and boating are popular and organizations are maintained to promote both. Amateur sports of all kinds flourish under the direction of the schools, Y. M. C. A. and other organizations. The city also has commercial baseball and football teams in season. Boxing is well supported. Public playgrounds are operated for the benefit of the children in all parts of the city and in summer play is supervised.

Rock Island is headquarters for the corps of United States engineers in charge of improvement and maintenance of the Mississippi river and adjacent waters from the mouth of the Missouri river to the mouth of the Wisconsin. Offices are in the Federal building. A staff of twenty-five men is employed, in addition to those manning the government fleets used in river work, the government boat yard in the Hennepin canal near Milan and the government drydock at Keokuk. Through this office from $700,000 to $1,000,000 is expended annually, depending upon the size of congressional appropriations, mainly for the purpose of creating and maintaining a channel depth in the Mississippi at all times of at least six feet. Accomplishing of this end is expected to greatly facilitate the efforts of those endeavoring to develop the freight-carrying possibilities of the stream. An outdoor force of from 800 to 1,000 men is kept at work on river improvement in this section during the summer season.

In addition to the river engineers, permanent offices are maintained in the federal building for the United States revenue bureau, department of commerce, department of justice, treasury department and postal department. The structure is three stories in height and represents an investment of $225,000. The local postoffice occupies the entire ground floor.

Rock Island has adequate fire protection. Its fire department, which is under civil service, has six stations, with thirty-two men and standard motorized equipment throughout. There are two pumps, one of 1,000 gallons capacity per minute and the other 700 gallons. Fire insurance premiums are based on a Class Three rating. Average fire losses during the last decade have been $174,222 yearly. In case of a general fire aid from Moline and Davenport can be secured in 10 minutes.

Streets and alleys of the city are well kept. The sum of $30,000 is expended annually for this purpose. The city maintains an incinerator for garbage disposal.

There is a state free employment bureau in Rock Island, which, during the last five years, has found work for an average of 75,569 men and women annually.

A live county farm bureau is in existence, with headquarters in Rock Island. This organization has a membership of 700 and maintains a paid advisor. There is also a home bureau reaching 800 women in the rural sections, and having a competent director. Fine results have been obtained by both organizations.

Not the least important evidence of Rock Island's attractiveness is its popularity as a convention city. This has resulted in the holding there in recent years of many state and a number of national meetings.

HISTORICAL

It was from the island, now the site of the greatest manufacturing Arsenal and military storehouse in the world, that the county of Rock Island and city of Rock Island received their name, and in the order named. Rock Island county was created by act of the Illinois legislature Feb. 9, 1831, and the first election of county officers took place July 5, 1833.

The city, or as it was then known, town of Rock Island did not come into being till 1841, when the legislature changed the name of the village of Stephenson to Rock Island and provided a charter, under which the first election was held in July of the same year. A city charter was adopted by the legislature and approved Feb. 12, 1849, and served as a plan of municipal government till Feb. 16, 1857, when one better suited to the needs of the growing community was provided. This was in force till 1879. Nov. 4 of that year the people voted to incorporate under the general law.

The site of the present city of Rock Island was a favorite one with the Indians as far back as written history of the locality goes. Once it was inhabited by the tribes of the Illini. The Sacs and Foxes, first known to have dwelt along the lower St. Lawrence in Canada, came into this part of the country from southern Wisconsin, driving the Illini remnants southward and taking possession about the year 1722. A village was built on Rock river in the southern part of the present city of Rock Island, the site being favored because it was protected by water on three sides and there was a high bluff at hand, now known as Black Hawk's Watch Tower, which served as a look-out to scan the country round about for the approach of hostile bands of warriors. This village, known to historians as Saukenuk, became one of the most populous found by the early white explorers.

Being a strong, courageous people, wisely led, the Sacs and Foxes prospered and more than held their own in the wars they carried on with other nearby tribes. They took some part in an expedition against the Americans at Cahokia in the Revolutionary war and their village was burned

in reprisal. Again in the war of 1812 the Indians were active on the side of the British. From that time on there were many clashes with the white settlers till finally Black Hawk, who became chief early in the nineteenth century, was driven, with his followers, across the Mississippi as a result of the Black Hawk war of 1832.

The first house on the present site of Rock Island was built in 1826, on the river bank near the south end of the Rock Island railroad bridge at the foot of Twenty-ninth street, by Colonel Davenport and Russell Farnham. This structure, later known as the house of John Barrel, was the seat of the original county government and the center of the settlement known as Farnhamsburg. The town of Stephenson was laid out under legislative authority in 1835 to be the county seat. It comprised twenty blocks adjacent to the present court house square. It was later enlarged to include Farnhamsburg and other contiguous territory.

Protection offered by Fort Armstrong against Indian depredations attracted settlers to the locality in the early days. The place became a favorite crossing point on the Mississippi, partly because of the presence of the fort and partly because the stream was narrow and the banks high, making approach easy, and providing good landings. After the Indians were gone the land nearby was rapidly taken up and the settlement grew apace. First comers were hardy American stock traveling by wagon, on horse and afoot from the east, or by boat from the south. There were migratory waves from southern Illinois and Kentucky, from Indiana, Ohio and Pennsylvania. Some from the eastern states came down the Ohio river and up the Mississippi.

Advent in 1854 of the Chicago & Rock Island railroad, the first to reach the Mississippi from the east, gave Rock Island a pronounced boom. The place for a time was the sole junction point on the river of rail and water transportation lines. Population grew rapidly. Business increased. Industries, provided with shipping facilities which were exceptional in that day, sprang up. The village became a city. Rock Island's fame spread, reaching even across the Atlantic. From northern Europe came immigrants, the most desirable class that ever landed upon our shores. They came looking for permanent homes and found them here, building up the city and becoming part of it. Many of the pioneer families were of German, Irish, Scandinavian or other northern European stock. The east end of the city was settled largely by Swedish families and their descendants, overflowing from Moline. Later came Belgians and a scattering representation from Mediterranean countries. The advent of those from across the sea, however, has been gradual and they have been most thoroughly assimilated. The native born element always predominated heavily and does to this day.

Rock Island's foundation was laid by men of unusual force, enterprise and wisdom. They had high ideals and sound judgment. The city was

never suffered to lag behind in the procession. It always has been rated as a leader in every field of endeavor. It never was a one-man or a one-industry town. The diversity of its interests has been a leading factor in its steady progress.

A heavy shipping business was done by water in the palmy days of the Mississippi steamboat, in the fifties, sixties and seventies. The decline of the water carriers found the community well supplied with railroad facilities to take their place, so that the city really was the gainer by the change.

When the river was the artery down which flowed the pine to build homes for the people of the central west the lumber industry in Rock Island throve as it did in few other cities. But passing of the log and lumber raft into history was not attended by a decline in manufacturing prestige, for the reason that other industries had been progressively developed as the supply of timber declined and, with more diversified opportunities for investment and employment, a broader foundation for community prosperity resulted.

Since the earliest days Rock Island has gone forward steadily in wealth and population. At no stage in its history has its momentum been materially checked. It has encountered the usual obstacles, but in all cases they have been overcome and invaluable lessons learned in the operation. The manner in which it has met and mastered its problems is the best possible assurance for its future. As a city of 35,000 its resources and opportunities are no less outstanding than they were when it was a village before the railroad came. And there is not the slightest reason to doubt that the years to come will bring to it growth and prosperity, even as did the years that are gone.

City of Davenport

Population (1920 census)—56,727.
Area—16.24 square miles.
Miles of streets—188.
Miles of pavement—120.
Miles of sewers—133.
Miles of water mains—114.
Miles of street railway tracks—50.
Miles of main line railroad tracks—24.5.
Miles of other tracks—35.9.
Acreage of parks—750.
Total banking resources—$55,945,060.
Postal receipts (1922)—$481,572.31.
Assessed valuation of property (1922)—$69,667,020.
Value of moneys and credits—$15,063,450.
Municipal appropriations for fiscal year 1922—$848,300.
Number of homes (1920)—12,042.
Number of families—14,388.
Percentage of owned homes—75.
Number of native born white residents—18,385.
Number of registered voters (1920)—28,000.
Iowa's principal eastern gateway.
Served by three great railroad systems and two interurbans.
Has seven miles frontage on navigable water.
Largest city between Chicago and Des Moines and St. Louis and Twin-Cities.
Most important jobbing and retail center in its territory.
One of four adjoining cities with combined population of 150,000.

FIRST in Iowa in wealth and third in population, Davenport, the state's main gateway to the east, is showing other cities in the upper Mississippi valley how to do it. The source of its strength lies in the strong common sense of its people, their capacity for organization, and their will to go forward. These influences, operating for more than three-quarters of a century in a favored environment, have won victories in commerce and industry and over the material obstacles to municipal growth and greatness such as few communities can boast. They have resulted in an impetus which even the reconstruction period following the World War did not visibly check.

Davenport is the "big brother" in the Tri-City group. It enjoys the advantage incident to its location west of the Mississippi, being the converging point of lines of trade and travel from the great west, upon which it takes the customary toll. It excels in facilities for the distribution of goods, both by wholesale and retail, and for the accommodation of transients. Its people have expressed their faith in its future by liberal support of improvements, both private and public. With their surplus resources they have invested in enterprises which carry the city's name and influence far beyond its immediate environs. It is a social and recreational center, noted also for its educational and research work and for the extent to which it patronizes the arts.

Nature bountifully endowed the place where Davenport has been builded with those things which make life desirable. Well rounded hills rise not too abruptly above the Mississippi, flowing past at the south, providing a site well calculated to display the structural handiwork of man and supplying vantage points from which to see, as well as to be seen. Safe above flood water, the lower levels give ample room for business and industrial development, while the rolling uplands and the hillsides, with their southern exposure and perfect air drainage, are ideal for residence purposes.

Here the early settlers found water to carry goods, to generate power and supply the needs of a city. Here was stone and sand and gravel and lumber, floated down from the great pineries of the north, with which to build. Fuel above ground in the native forests was at hand and beneath the ground not far away coal in unlimited quantity. Here was abundant rainfall and a climate not too cold and not too warm. Stretching away to the west for hundreds of miles was fertile land, the product of which must ever flow eastward to be exchanged for manufactured goods, which in turn must flow westward by the same route.

To this place, so highly favored, came first the explorers, then the traders and then the pioneer settlers, pressing back the copper-hued tribes. The first whites were of the cleanest and most enterprising native stock. Later comers included the best that Europe had to offer, the German element predominating. To the river bank opposite came the first railroad reaching out from the east, and here the first bridge was thrown across the Mississippi. Out of the city the first rails pushed across the prairie westward to the Missouri and on toward the mountains.

And so grew the city of Davenport. Since the first house was built each year has brought it added population and wealth. It boomed but once, during the fifties, when in a single decade it advanced out of the village class. At other times it just expanded gradually and steadily and along safe and enduring lines. Let the United States census reports tell the story:

	1850	1860	1870	1880	1890	1900	1910	1920
Population	1,848	11,267	20,038	21,831	26,872	35,254	43,028	56,727
Percent of Increase		509.7	77.8	8.9	23.1	31.2	22.1	31.8

Davenport is the seat of government of Scott county, with a population of 73,952, which also has shown a steady growth, averaging 19.7 per cent in the last three decades. With the adjoining counties of Clinton, Cedar and Muscatine added to that of Scott there is a combined population of 163,925.

Numbers are significant, but increase in population in the case of Davenport has been accompanied by material prosperity that is even more striking. The city now has twelve banks and their total combined resources at the close of 1922 amounted to $55,945,060. Total annual bank clearings are approximately half a billion. The following figures, taken from reports of all banks in the city and totalled, offer the best possible evidence of financial stability and growth, both in the World War period and during the era of reaction following it:

	Capital Stock	Surplus and Profits	Loans and Investments	Deposits	Total Resources
Feb 5, 1913	$1,900,000	$2,184,231	$29,470,124	$30,324,957	$39,969,502
Mch. 4, 1919	2,150,000	3,081,695	42,090,371	44,660,713	51,971,925
Dec. 29, 1922	2,600,000	4,015,734	48,144,843	46,064,952	55,945,060

The growth of the city's postal receipts also is unusual, and accurately reflects the expansion of its business and commercial interests. Note the showing by five-year periods since 1900:

1900	$ 85,700.00
1905	118,878.75
1910	183,629.73
1915	271,362.08
1920	440,557.14
1922	481,572.91

Assessed valuation of property in the city of Davenport for the collection of revenues for 1923 was $69,667,020. Municipal taxes were levied upon approximately one-half of this sum and upon $15,603,450 listed in moneys and credits, at the rate of 2.7 mills on the dollar. Municipal appropriations for 1922 were $848,300.

Davenport takes a high place in the character and extent of its public improvements, and travelers commend it for its well-kept appearance. It has 188 miles of streets and 63 miles of alleys. One hundred twenty miles of streets and alleys are paved. Pavement, especially in the business district, is kept in good condition by prompt repairs or resurfacing when necessary. Streets as originally laid out are wide enough to meet the needs of an ever growing traffic. The coming of the motor vehicle did not cause the inconvenience so often suffered by other cities which had been planned on less liberal lines.

Davenport lies admirably for purposes of drainage. There are 20 miles of storm drains and 113 miles of sewers. The river furnishes a convenient outlet. Clogging and overflowing of drains and sewers rarely takes place.

Connecting up with the city's streets are eight primary highways leading out into the country on the Iowa side, which are being permanently surfaced, mostly with brick. Scott county has in hand and nearing completion at the close of 1922, a road improvement program involving an outlay of $3,000,000 and calling for work on all primary thoroughfares centering in the county seat. Similar work undertaken on the Illinois side promises early completion of hard roads east, north and south. To reach the Illinois side Davenport enjoys the use of the two-deck, double track Rock Island bridge, government owned and maintained, and the only one between St. Louis and St. Paul on which no tolls are charged.

Davenport and Bettendorf, its eastern suburb, together have seven miles of frontage on navigable water. Appreciating the advantage of water transportation and believing in the future of the Mississippi in this connection, Davenport has taken the lead among upper river cities in levee improvement. Nearly a mile of sea wall has been built, at any point of which freight may be transferred by gravity or power from rail to boat and vice versa, doing away with expensive hand labor. There are also 1,000 feet of paved sloping levee. The Davenport Levee Commission was organized for this undertak-

ing. It issued bonds, which are being retired by rentals from reclaimed land, $205,000 being outstanding at the close of 1922. A municipal wharf has been constructed for a packet terminus. Most of the reclaimed land, which lies adjacent to the business district, has been transformed into an attractive park, known as LeClaire park, and comprising 11 acres. Area of all the land reclaimed when the sea wall is extended down stream to the present city limits will be 125 acres. It is estimated that the cost of the whole improvement will be $1,000,000. The entire benefit, which will be much in excess of that sum, will accrue to the city. Work already done has wonderfully bettered the appearance of the waterfront, making it a model which is being copied elsewhere.

The area of Davenport is 16.24 square miles, of which 10 square miles are platted. About three-fourths of the city lies on the bluff, reaching a maximum altitude of 150 feet above the river and of 728 feet above sea level. The lower land, well adapted to business and industrial uses, is adequately served by rail, as well as water transportation facilities. Railroads parallel the river the entire length of the city and branch out into all parts of the industrial district at the west end. Three lines cross the city transversely, striking back into the country in different directions. In addition to the trunk lines of the C. R. I. & P., C. B. & Q. and C. M. & St. P. roads, there are the D. R. I. & N. W., a belt line, and two interurbans of the C. D. & M., one operating up the river to Clinton and the other down to Muscatine. There are within the city 28.5 miles of main line and 35.9 miles of other tracks. In addition to the latter there are nine miles of switch tracks forming the terminal yards of the C. M. & St. P. at Nahant, just west of the municipal bounds. There are 32 steam passenger trains in and 34 out daily. Interurban trains number 22 each way. In 1922 the railroads received 26,991 carload lots of freight and forwarded 11,124 carloads.

Davenporters are fortunate in the character of the public utilities which serve them. Standards are unusually high and costs compare favorably with those in other cities. The Tri-City Railway & Light Company owns and operates street railways, gas and power plants and a central heating plant supplying steam to office and business blocks in the down-town district.

The water plant is privately owned and is one of the best in the country.

For many years Davenport has had exceptionally good street railway facilities. It claims the first electric car regularly operated in the United States. There are now 50 miles of street railway track. An 8-cent fare is charged.

Facilities for the production of gas and electrical energy for power and illumination are considerably in advance of the city's normal needs, and it is the policy of the company always to so maintain them. There are 205 miles of gas mains, reduced to a three-inch equivalent, and 703 miles of wire for power distribution. The number of gas and electricity users is significant

of the high standards of living prevailing. There are 13,379 of the former and 13,368 of the latter. The 1920 census showed 12,042 homes and 14,388 families.

The Davenport Water Company installed one of the first mechanical filters used in the middle west. Its raw supply is taken from the channel of the Mississippi at a point well above the center of the business district, and so effective is the process of purification that turbidity is entirely eliminated at all times, and the supply always has met the most exacting tests. Large storage reservoirs on the bluff give the business section the advantage of gravity pressure. There are 114 miles of water mains and they are of greater capacity than is commonly used. Capacity of the filters is 9,000,000 gallons per day, twice the average consumption, and the capacity of the pumps is 31,000,000 gallons.

Davenport has but one telephone system and through it is given free connection with adjacent cities on the Illinois side and also with villages and many rural subscribers in Scott county. There are 1,904 business and 9,279 residence stations connecting with the local exchange. Rates are $4 per month for residence and $8 per month for business service.

Davenport's business interests are well balanced. It is not preeminently an industrial city, yet it excels in certain lines of manufacturing, and there has been a marked expansion in this direction in recent years. The 1920 census showed 219 industries, with value of yearly output of $55,000,000 and 5,271 workers employed. The two years following saw a material increase in the number of concerns, but there has been no detailed survey since that made by the federal government. Among the factories are several marketing part of their output in foreign countries and a larger number distributing products on a nation-wide scale. These concerns carry the city's name abroad, giving it invaluable advertising.

Thousands of freight cars are made annually in the Bettendorf shops, the largest single industry, with 30 acres under roof. The city leads in the making of washing machines, metal wheels, brooms, ready-cut houses and motion picture projectors. Other products finding a universal market are light locomotives, pumps, type-setting machines, cereal products and pearl buttons. Foundry products, cigars, candy, bakery products, overalls, optical goods, ladders, industrial gases and packing house products are also extensively manufactured. There is a $2,000,000 cement mill on the river bank just above the city and another one is planned, to be located a few miles below town.

Davenport enjoys unusual advantages which appeal to manufacturers. Among them are presence of water power, nearness of fuel and raw materials and facility and economy of distribution in a territory of exceptional buying power. There is also a large supply of well-trained labor, in which

the city's resources are supplemented by those of its nearby neighbors on the Illinois side.

Good transportation facilities and favorable freight rates also help enhance the city's prestige as a jobbing and retail center. There are 120 wholesale establishments, with an annual business estimated at $50,000,000. They employ 700 traveling salesmen.

Retail concerns include six department stores, eight ladies' ready-to-wear, 23 clothiers, 20 shoe stores, 193 groceries and 30 drug stores.

The city is headquarters of the Federal System of Bakeries, with hundreds of shops in all parts of the United States, and is the home of several large construction companies prepared to execute almost any kind of a contract in any part of the country, and doing an annual business running up in the millions.

Davenport has many fine buildings. Among the most imposing are the Blackhawk hotel, with 416 rooms, largest in the state, the $1,000,000 Kahl office building and the new eight-story Parker department store, which has no superior in middle western cities. A $1,000,000 Masonic temple is in course of construction. Among the public buildings are a central high school of unusual size and completeness, an imposing court house, fine city hall and federal building and a large library. Commodious and well appointed homes crown the prominent bluffs overlooking the valley and the landscaping is effective to an unusual degree. Camp McClellan addition in the east end, commanding a view of the river and Rock Island Arsenal, and built up with residences of the more costly class, is one of the show places of the community.

Good homes are the rule, and the tendency constantly is toward improvement in average quality. New additions are being laid out rapidly. There is unlimited room for growth, most of the suburbs being on rolling ground and well supplied with paved streets and trolley lines. The 1920 census showed 12,042 homes, but it is probable that 13,000 would be nearer the correct number for 1922. In that year 360 new residences were constructed and $3,249,000 was expended on buildings. It is estimated that three-fourths of the homes in the city are owned by the occupants. That is an unusually large proportion, and speaks well for the thrift, enterprise and stability of the people. Residences and lawns, as a rule, are well kept, reflecting the prosperity and content of the owners. Rents are not exorbitant. An exceptionally liberal policy is pursued in the financing of home building enterprises.

In the matter of schools Davenport is second to none. There are 17 grade and three intermediate schools and one high school in the public system, with 13 parochial and diocesan schools and 17 miscellaneous. The high school, built on a commanding site in 1907, at a cost of $350,000, is one of the conspicuous structures of the city. It accommodates 1,600 pupils.

Schools maintained by religious denominations include St. Ambrose college for boys and the Academy of the Immaculate Conception for girls, both conducted by the Roman Catholic church, and St. Katharine's school for girls, under the auspices of the Episcopal diocese of Iowa. The miscellaneous schools include the Palmer School of Chiropractic, with 2,500 students, drawn from all states in the union and from many foreign countries.

Public school attendance for the 1921-22 year was 9,621. School expenditures the same year were $820,000. Value of school property was $3,006,920 in buildings and grounds, and $280,246 in equipment. The school bonded debt was $1,023,000.

Public school pupils are given every advantage to promote their educational advancement and physical welfare. There is special instruction in drawing, music, manual training, cooking, sewing, physical culture and nature study. School physicians and nurses are employed. Special schools are maintained for deaf children and those with defects of speech. A training course for teachers is part of the regular high school course.

The Davenport library is well housed, centrally located and complete. At the close of 1922 it had 78,158 volumes and the circulation for the year had been 456,564. Eight stations in various parts of the city are maintained.

More than eighty per cent of the people of Davenport claim church affiliation. All told there are 43 churches, including practically all denominations. There are two cathedrals, this being the see city of the Roman Catholic diocese of Davenport, comprising the southern half of Iowa, and of the Episcopal diocese of Iowa. Auxiliary religious organizations are well supported. The Y. M. C. A. has a membership of 1,300 and the Y. W. C. A. of 1,200. The former occupies a building specially erected for its use, and the latter has extensive rented quarters.

Few cities are so well supplied with organizations, business, educational, welfare, recreational and for the promotion of science and the arts as is Davenport. They are numbered by the scores, their purposes cover almost the whole field of human endeavor and nearly every resident is enrolled in one or more of them. Many are German in origin and character, led by the Turners and their various branches. The spirit of mutual helpfulness which pervades the community is manifested in numerous beneficiary and welfare societies, some with but a few members and some with many hundreds. These have headquarters in all parts of the city and do a magnificent work. People of means and benevolent inclination have endowed a number of these with praiseworthy liberality, enable them to operate on a broad scale and to build, equip and plan adequately for the future.

Leading among the business organizations is the Davenport Chamber of Commerce, occupying a handsome home of its own and maintaining traffic, credit, manufacturing and retail bureaus in charge of paid secretaries. The

traffic bureau has complete tariff files and the credit bureau keeps up-to-date ratings to the number of 80,000. The Chamber of Commerce is headquarters for the live men of the community, and is doing effective work in furthering the city's interests and exploiting its advantages. Its motto always has been "Business Before Pleasure."

Benevolent work is participated in by such organizations as the Ladies' Industrial Relief and the Davenport Friendly society, having buildings of their own equipped for educational and recreational, and, in the case of the former, for charitable work. The Visiting Nurses' association keeps six nurses whose services are free to those unable to pay for them. The Lend-a-Hand club looks after the welfare of working girls and is building a $200,000 home for them, a complete club, with all customary club facilities, a large dining room and quarters for 80 lodgers.

There are four hospitals with a combined capacity of 300 beds. Eleemosynary institutions include the Clarissa C. Cook Home for the Friendless, a refuge for women, the Fejervary Home for Aged Men, and St. Vincent's Orphan's home. The Iowa Soldiers' Orphans' home, maintained by the state, and capable of caring for 500 inmates, is located in the city. Pine Knoll sanatorium, maintained by the county for treatment of tuberculosis, has a capacity of 50 patients.

The public museum of the Davenport Academy of Sciences, organized in 1867, ranks with the museums of cities with many times the population of the Tri-Cities. The collections fill to overflowing two large connected buildings owned by the institution. There are departments of natural history, commercial geography, local history, American ethnology and archaeology (especially Mississippi Valley mound-builders), and exhibits from Egypt, Greece, Rome, China, Japan, Peru, Alaska and other parts of the world. The museum is visited by 15,000 people in a year. It has been built up by the generosity of many citizens. Its endowment is assured by a trust fund and it is planning for a new fireproof museum and art gallery building.

The C. A. Ficke collection of paintings, valued at half a million dollars, recently has been given to the city, and public spirited citizens have undertaken to provide a home for it. Permanent literary, debating and study clubs are numerous and reach a great many people. Women's organizations number more than a score. Many of them are educational in their purpose, while others are devoted to the arts, especially to music, which Davenporters liberally patronize. The Tri-City Symphony orchestra, taking rank with the best in the country, and the Tri-City Musical Association, which sponsors entertainments by the world's leading musical celebrities, are strongly supported in Davenport and their programs there are given in the coliseum, well adapted to such uses and having a seating capacity of 3,000.

Among the fraternals, the Masons long have held a leading place. Their original temple having been outgrown, the Masonic bodies are now erecting one of the most pretentious structures of its kind in the country, to be thrown open during 1923. The Elks, Turners, Ancient Order of Hibernians, Knights of Columbus and Danish Brotherhood have buildings of their own, while the Eagles are building and the Odd Fellows expect to do so soon. Few fraternal organizations that are more than local in character are without branches in the city. There are half a hundred labor unions, embracing all crafts and most of them affiliating with the Davenport Trades and Labor Assembly.

In the planning of Davenport, recreation has been well provided for, and there are numerous organizations to promote that end. Among these may be mentioned the Outing club, with house and grounds only a few blocks from the center of the city, the Rock Island Arsenal Golf club, more than half of the members of which are Davenporters, certain branches of the Turners, and numerous clubs to encourage shooting, bowling and other sports, both outdoor and indoor. There are 14 parks, well distributed within the city limits, and having a combined area of 379 acres. Of these VanderVeer park is noted for its flowers, while in Fejervary park is a small zoo. Credit island, a tract of nearly four hundred acres, is owned by the city and is equipped with golf course, bathing beach, baseball grounds and other recreational facilities. It is open to the public free of charge, and though outside the municipal limits, is easily reached. At LeClaire park, on the levee, the city, in 1922, constructed a well appointed natatorium costing $100,000. Attractive and well improved drives leading out into the country in all directions have a strong appeal to motorists. A well-appointed tourists' camp is provided for visiting automobile parties in summer time.

Efforts to beautify the city have been highly successful in Davenport, and there are many sightly spots within and near its borders. There are no "Keep off the grass" signs in the public parks. All schools have playgrounds, well equipped, and there are three public playgrounds with wading pools. The Davenport Boat Club has a harbor and club house and has sponsored a number of regattas, attracting power boat enthusiasts from all over the middle west.

Indoor recreation is supplied by four theatres and 15 motion picture houses, among which the new Capitol theatre is recognized as one of the finest in the country.

Davenport's fire protection ranks with the best. Fire insurance is written on a Class Two basis, a rating accorded few other cities. Large pumping capacity of the water company, over-size mains in the fire limits, enforcement of a satisfactory building code, and effectiveness of fire fighting forces and equipment are factors considered in establishing the low rate. There are seven fire stations, with 67 men. Equipment is all motorized

and includes two large pumps. There are 1,150 fire hydrants in the city. Help from Rock Island and Moline is always available on short notice. Average fire losses for the past 10 years have been $176,727.

There are two police stations, with a force of 62 men. Law enforcement is effective. The number of arrests for the last 10 years has averaged 2,398 and the average annual collection of fines has been $8,378. Unusual attention is given to directing of traffic in business streets. A federal law enforcement organization is maintained in the city, including a United States commissioner, deputy United States marshal and prohibition agent. There is an adequate local health and inspection service.

The federal government maintains a weather station in Davenport fully equipped and manned by a meteorologist and two assistants. Weather data from all over the country and river stage bulletins from points on the Mississippi from Dubuque down to Muscatine are collected daily. Reports are sent out over the Tri-City district and are broadcasted by radio, making them available for many miles. Records kept since 1871 show an average rainfall of 32.27 inches, average winter temperature of 24.3 degrees, spring temperature of 49.1, summer temperature of 73.1 and autumn temperature of 52.4. The average growing season has been 174 days. There have been no crop failures in the vicinity in 50 years.

Davenporters take great pride in their city. They are ever alert to add to its advantages and always have a warm welcome for visitors. Many conventions are entertained. There are half a dozen hotels of high rating and a score of others in which visitors may find comfortable quarters and at moderate cost. One of the city's leading attractions is the Mississippi Valley Fair and Exposition. This was opened in 1920, and took high rank from the start. The grounds, just outside the city limits, comprise 90 acres and represent an investment of $550,000. There is a modern half-mile track, grandstand of unique design, built to afford occupants a view of aerial spectacles, as well as those occurring on the ground, and with large seating capacity, together with all other necessary buildings of a class usually found only at state fair grounds. The annual fair, open for a week in 1922, drew a paid attendance of 80,899.

The Scott County Farm Bureau, formed in 1912, with headquarters in Davenport, is one of the three oldest in the state. It has 1,200 members, a paid secretary, or advisor, and is one of the most active and progressive in the country. Agricultural interests of the county have experienced much benefit from its work, which is covering an ever widening field.

Davenport has Battery B of the state militia, with a total membership of 80, and an artillery armory of large size and modern design, which is battery headquarters of the Iowa National Guard.

One of the best boat harbors on the Mississippi is located at the west end of Davenport, in the slack water formed by building a dam, also used as a

driveway from the mainland to the head of Credit island. Many craft winter here and some boat building and repairing is done.

Already well supplied with land and water transportation facilities, Davenport expects also to figure prominently in the development of air routes. It now has a commercial flying organization and an aviation field where aviators are trained and airships are built. The city is on the main New York-San Francisco route of the United States airways systems as mapped out by the aviation branch of the army, and expects also ultimately to be made a junction point between the east and west line and the main one crossing the country north and south and connecting New Orleans, Memphis, and St. Louis with Minneapolis and St. Paul and points in Canada.

HISTORICAL

The first house built by white men on the site of the city of Davenport was a rude cabin put up in 1833 by Antoine LeClaire and a party of Frenchmen. LeClaire, who figured prominently in the pioneer life of the community and was a leading resident of the city for many years, was half Indian and had an Indian wife. His cabin was placed in the midst of the Fox Indian village, which the white men had named Morgan. The Indians left in 1834 to take up their abode on the Cedar river. The townsite was laid out in 1835-36, and named in honor of Col. George Davenport, an Indian trader and first settler on the island, near Fort Armstrong.

It is probable that the first white man to see the site of Davenport was Radisson, a Frenchman who explored this part of the country in company with a band of Indians about 1660. There is authentic record of the coming in 1673 of Marquette and Joliet, who met a tribe of Illini Indians there. White men came to the locality to stay when Fort Armstrong was built in 1815. The year previous an American expedition headed by Lieut. Zachary Taylor, afterward president of the United States, had been defeated by Indians and British in what has since been known as the battle of Credit Island, fought mostly within the present city limits.

LeClaire came in 1818, as interpreter for the commandant at the fort. He acted in that capacity when the treaty following the Black Hawk war was negotiated in 1832 at a point now within the city. In this treaty the Indians ceded the land to the government, but reserved a quarter section for the wife of LeClaire. On this land the first house was built. Two men claimed the original townsite. LeClaire bought out both for $150 and joined with half a dozen others in platting the ground. Fifty or sixty lots were sold at auction, mostly to St. Louis speculators, and the men at the head of the enterprise divided the rest among themselves. The town was incorporated late in 1838, and the first election was held April 1, 1839. A new charter was voted by the legislature in 1843 and a third one in 1851, which, amended from time to time, is still in force.

What is now Iowa was once a part of the territory of Wisconsin. Iowa territory was laid out in 1838. A county government was set up the same year and Rockingham was the first county seat. County commissioners did not meet in Davenport till 1840.

Davenport remained a very ordinary frontier settlement, though enjoying the advantages of a large river traffic, till the coming of the railroad. The Chicago & Rock Island was completed to the latter city in 1854. Several years earlier Davenporters had become actively interested in promoting a trans-continental line, and in 1852 the Mississippi & Missouri Railroad company was organized to build across the state of Iowa and join the two streams, with Davenport as the eastern terminus. Ground was broken in 1853 and some road had been built before the iron horse was brought across the river to help with the undertaking.

The first locomotive to cross the river was ferried over on a flatboat July 19, 1855, and was christened the Antoine LeClaire. It pulled the first train out of Davenport Aug. 22 of that year. During the winter following another locomotive and seven freight cars were hauled across the river on the ice. The first locomotive crossed the bridge April 21, 1856. Not till a dozen years later was the road, now part of the C. R. I. & P. system, completed to Council Bluffs.

Davenport grew rapidly as a result of its advantages of location and its superior transportation facilities. It became an important distribution center for eastern Iowa, handling a good share of the building materials and other goods consumed in the developing of the territory, and of the farm products given in exchange.

Manufacturing began with lumber and flour, two basic necessities most in demand in the locality. For many years a large business was done, especially in lumber. When the lumberman and the miller passed on north and west to be nearer their supplies of raw material their places were taken by other manufacturers making such things as wagons, implements, clothing and food products, and laying the foundation for the later industrial growth of the community.

When it began to assume importance as a city Davenport's banking resources grew rapidly. It always has been noted for the number and strength of its financial institutions. Confidence in them for years has brought depositors from other localities and has helped to make the city a center for the buying and selling of securities and for the financing of all sorts of enterprises. An important step for the advancement of community interests took place in 1895, when the Davenport Clearing House Association was formed.

In the early days, as now, the city excelled as a trading center. The opportunities presented attracted men with business ability and means to

operate on a large scale. Low freight rates by water prevailing in the days of the steamboat were met by the railroads, with which the city was well supplied, and the resulting advantages made it easy to compete with other centers, especially those not on navigable streams. While the river does not now figure prominently as an artery of commerce, Davenporters are confident that its prestige will be at least partly restored, and at no distant date. When this is done and the proposed water way link to the Great Lakes in Illinois is completed substantial benefits await the river towns, and Davenport will be in position to share in them.

In the four score years of its career Davenport has traveled far, and not in vain. It has done big things, and by doing them has found the wisdom and the strength to grapple with even larger ones. It breathes the atmosphere of success. It has won the fight that faces every city which would be truly great.

Moline, East Moline, and Silvis

Moline population (1920 census)—30,745.
Average population gain by decades since 1860—58 per cent.
Number of industries—55.
Capital invested in industries—$108,000,000.
Total banking resources (Dec. 29, 1922)—$18,774,497.
Postal receipts (1922)—$272,546.
Area of city—6.5 square miles.
Miles of paved streets—58.
Miles of sewers—68.
Acreage of parks—170.
Capacity of city pumping plant—17,000,000 gallons.
Annual expenditure for public education—$450,000.
Number of homes (1920 census)—6,535.
Number of owned homes—5,000.
Has water power and good steamboat harbor.
Combined population of Moline, East Moline and Silvis—41,950.
Greatest implement making center in the world.
Number of workers employed in industries of the three cities—10,000.
Annual carload shipments in and out—40,000.

MOLINE, East Moline and Silvis together comprise the industrial unit of the Tri-City group. Jointly they cover an area of more than ten square miles and have a population of 41,393 souls. Moline and East Moline form the largest agricultural implement manufacturing center in the world. Silvis is the home of the repair shops of the Rock Island Lines, one of the most complete establishments of the kind in the country.

Moline, known wherever man cultivates the land with modern tools as the Plow City, has a population of 30,734, according to the 1920 census. East Moline, laid out a score of years ago to accommodate Moline's industrial overflow, had a population of 8,675 when the last federal count was made, and Silvis was credited with 2,541 people. The combined population of the three cities named increased 13,336, or 47.7 per cent in the ten-year period from 1910 to 1920. Moline's gain has averaged 58 per cent by decades since 1860. East Moline's increase was 214.2 per cent from 1910 to 1920, while that of Silvis was 118.4.

Moline, besides offering many advantages by reason of its exceptional location with reference to assembling of materials and distribution, its fine transportation facilities and the high class of its labor, is an ideal home city. So, also, are East Moline and Silvis. This is primarily because of the character of the people, the great bulk of its bread-winners being skilled workmen who, favored by steady employment at good wages and being as a rule by nature thrifty, have established homes of their own. Sober and industrious, fairly rewarded for their labor, they are contented and stand for the things that make a city attractive.

Manufacturing plants in Moline and East Moline are segregated along the river, giving the advantage of level sites and accessibility to rail and water transportation. Both cities have room on the flat at the foot of the bluffs for flourishing business districts, while the hills and level upland farther south are ideal for residence purposes. Moline has spread across the latter, nearly two miles in width, and is about to invade the valley of

Rock river, the bluffs of which already are occupied by residences. Silvis is not on the river, but its manufacturing district is confined to the bottom of the valley, in conformity with the zoning of its neighboring cities.

The progressive spirit of her citizens has made Moline's development safe and sure. Established originally as a mill town, it always has aimed chiefly at industrial expansion, but its enterprise also has sought and found other outlets. Many big civic undertakings have been successfully handled and it has weathered periods of depression with never a step backward. Its people have shown their faith by their works, and their works have created a city that is fair to look upon, and as good as it is fair.

A typical achievement of Moline was the removal of its business district from the north side to the south side of the railroad tracks which bisect the down-town section. The advantage of having the main retail area on one side or the other was obvious. Crossings were dangerous and often were blocked by trains. Overhead tracks were out of the question. There was urgent need that something be done, and something was done in a surprisingly short time and with most gratifying results.

In the early days the city's retail business was done mostly in two blocks on Second avenue. Expansion brought Third avenue to the front, three or four blocks there becoming the center of activities, with a gradual encroachment upon Fifteenth street on the other side of the tracks. And then the time came, early in the present century, when still more room was needed. Third avenue was inadequate, and anyway the big implement makers had invaded it with their warehouses and were in need of still more space there.

The removal across the tracks did not just happen. It was planned deliberately and systematically. It began in 1903. New business blocks began to rise on Fifteenth street, on Fifth and even on Sixth avenues. Now, after twenty years, there are probably only two or three merchants still on Third avenue who were there when the movement began. The present business district is almost entirely new, which gives it an air of modernity not often found in a city that has been established for more than half a century.

The first lot purchased for business purposes south of the tracks in the transaction which started the exodus from Third avenue cost $112 per front foot. Three years later an adjacent lot sold for $300 per foot. Now it has a value of $1,000 per foot. The residence district has been pushed farther and farther south as the business district grows. There are also several groups of retail establishments on the bluff.

The move across the railroad tracks was the beginning of a new era in Moline. In fact, it may be considered the city's commercial re-birth.

Joel Wells was the first white settler in the territory that afterward became Moline. He and his two sons are said to have come to this vicinity

some time between 1829 and 1832. They at one time had possession of most of the land now forming the heart of the city. Other settlers arrived and the tract was devoted to agricultural purposes until after 1841.

In 1841 D. B. Sears and Spencer H. White constructed a dam from the Illinois shore to the island now occupied by the Arsenal, to harness the Mississippi rapids for the operation of a flour mill. Organizers of the mill company were Messrs. Sears and White and John W. Spencer. The plant was erected at the southern end of the dam and Thomas G. Patterson was the first millwright employed.

In 1842 the first industrial enterprise of the present Plow City was launched. Later Mr. Sears obtained control by purchasing the interests of his partners. He built another dam from Rock Island to Benham's island and placed a new mill there. Other small factories, attracted by the power, soon were located on the mainland and on the island, and so grew a nucleus for the later development of the community.

Meanwhile the spiritual and intellectual welfare of the settlers were not being neglected. In 1834 the first religious organization was formed by the Methodists. There were few members. Rev. Thomas McMurty, the pastor, opened the first school in 1835, and served as teacher.

Workmen employed at the first mill were without permanent shelter, and in 1842 Spencer White built the first frame house to serve as a home for the men. The following year the mill company laid out a town and divided it into lots, some of which were quickly sold. In 1843, also, the town was named. Selection of the name devolved upon a small group of pioneers who were interested in the enterprise. They did not agree, and so on the plat of the town were written two titles, Hesperia and Moulin. Hesperia means the star of the west. Moulin, from the French, means a mill. Charles Atkinson, who had the distinction of building the first brick house, held out for Moulin, and that name prevailed. The spelling of the name in some way was changed to conform with the pronunciation.

Moline was incorporated in 1848. Daniel Obermyre was the first village president, Daniel Gordon clerk, Cyrus Kinsey treasurer, Charles Atkinson assessor, A. M. Hubbard constable and collector, and John Patterson supervisor of the roads. A special act of the legislature permitted re-incorporation in 1855. City organization came in 1872. July 1 of that year the law providing for the incorporation of cities became effective. Two days later the village trustees were asked to have the question of a change submitted to the people. This was done and the proposition carried 261 to 22. Daniel L. Wheelock was the first mayor, Orrin Ferguson clerk, Charles F. Hemenway treasurer and John T. Browning attorney. John Deere was the second mayor.

It is to John Deere, more than to any other man, that Moline owes its prestige as an implement-making center. Deere began making plows in the

forties, and the excellence of his product, the quantity of his output and the vigor with which he sought new fields to market it soon spread the fame of the town. Gradually the Deere shops grew and their growth attracted other manufacturers, who set up plants to make plows and other implements, farm wagons, light vehicles, machinery, etc. Moline also once had its lumber mills, but their departure a score of years ago was scarcely noticed in the general industrial growth.

In time absorption of the individual enterprises by the Deere interests began. The Moline Plow Company also entered the field as competitor. Both major concerns acquired complete lines of plows, cultivating and harvesting machinery, tractors and motor and other vehicles. For the most part these were secured by purchase of home or outside individual manufacturing enterprises which were taken over and operated as a unit. To a large extent the industry has been consolidated in Moline and East Moline, with many millions invested, an immense output and with distribution facilities in practically all parts of the civilized world.

While the early growth of Moline and the later development of East Moline was given the greatest impetus by the implement-making business, neither place can be called a one-line manufacturing city. Moline has approximately 55 industries, including, besides the farm implement plants, one of the leading automobile factories in the country. Heavy machinery, furniture, steel products, automobile bodies, tools, wood products and licorice are a few of the other products that are turned out in large quantities. East Moline also has a big automobile factory, in addition to concerns making gasoline motors, laundry machinery, scales, storage batteries and metal and wooden novelties.

Value of the output of Moline factories for 1919, shown in the 1920 federal census, the latest official figures available, was $44,811,021. Capital invested was listed as $108,000,000. The number of workers employed was 5,444 and the annual wages $9,470,632. In that year East Moline factories employed about 2,600, the annual wages amounted to a little less than half of the Moline total, and the output and capital invested were in proportion. The number of men employed in the Silvis railroad shops and yards was nearly 2,000.

Moline's acreage is 4,183. Virtually all of this is platted. It has 97 miles of streets, 58 miles of pavement, 94 miles of sidewalks and 68 miles of sewer mains.

The assessed valuation of property in the city in 1922 was $11,980,000. Current appropriations were $528,999. The 1922 tax rate was $7.71 on the hundred dollars valuation. The city's bonded indebtedness in 1922 was $171,500.

There are 170 acres of parks and recreational centers in Moline. Two of the parks have lakes where wading and bathing are enjoyed in the summer and skating in the winter. Browning field is a completely equipped athletic

field, with a steel constructed grandstand having a seating capacity of 5,000. Professional baseball and amateur games are played there. It is easily reached from the business district. The six parks are conveniently located to serve the entire city. Public playgrounds are conducted in each of the parks by the Community Service League.

Recreational facilities include many attractive drives in and near the city. There is a vehicle bridge connecting with Rock Island Arsenal, the golf course of which is reached more directly from the business district of Moline than from that of either of its neighboring cities. Many business and professional men and manufacturers avail themselves of the advantages offered. Campbell's island, named after the commander of a river expedition which was attacked and defeated by the Indians during the second war with England, is maintained as a watering place, with bathing beach and summer camps patronized by thousands each season. There are many camps, also, on Rock river. Aquatic sports are popular. Pigeon clubs are numerous and flying contests are held in season. East Moline St. Elroy Driving club has a half-mile track on the outskirts of that city and holds regular meets in summer and autumn.

Moline has pure filtered water, the raw supply being taken from the channel of the Mississippi. The pumping capacity of the plant, which is owned by the city and valued at $1,198,914, is 17,000,000 gallons daily. The filter capacity is 5,000,000 gallons, or more than twice the average daily consumption. A filtered reserve of several million gallons is maintained. Water service is meterized throughout the city. The minimum quarterly charge for a five-eighths-inch meter, the size used by the average family, is $2.25; for a three-quarter-inch $3, and the rate graduates up to $30 for a 6-inch meter. There are 78 miles of water mains and 749 fire hydrants. The factory district is supplied through separate raw water mains with private pumping plant.

The fire department is modern and completely motorized. Four stations, centrally located, are manned by a crew of 28. The average annual fire loss for the ten-year period ending with the close of 1922 was $85,000. Because of its well organized department, complete fire-fighting apparatus, adequate water supply and strict attention to lessening of fire hazards, the city has an unusually low fire insurance rate, being based on a classification of two and one-half.

Moline has an efficient police department of 28 men. Law enforcement is uniformly effective, the city being kept unusually free from vice. Good order is maintained in public places and traffic regulations are not allowed to become a dead letter. There is a city court with resident judge.

Great pride is manifested in the schools of the city. There are 16 buildings, including a central high school costing $250,000. Total enrollment of pupils is 4,900. Annual expenditures for school purposes is $450,000. The

value of school property is $1,600,000 and the school debt $321,000. There are two Roman Catholic parochial schools with a combined attendance of 800.

Religious organizations are well supported. There are 27 churches, 25 Protestant and two Roman Catholic. Combined affiliations of the former are 8,000 persons and of the latter 4,500. Four new church buildings were started in 1922. Another, begun in 1919, was approaching completion. Church property has a total valuation of one and one-quarter millions.

There is a commodious Carnegie library, located in the business district and stocked with 32,000 volumes.

Moline has three hospitals with a combined capacity of more than 200 beds. One of these is city owned and supported by a 3-mill tax. There are a nurses' home, maternity home and detention hospital in connection and a training school for nurses is conducted. One of the other hospitals is maintained by the Rock Island district Lutheran churches, and its equipment includes a modern X-ray laboratory. It also has a nurses' training school. The third hospital, a private one, specializes in health baths.

Moline's status as a hotel city was materially advanced by the construction of the million-dollar LeClaire hotel, nearing completion at the close of 1922. This 15-story structure has 202 guest rooms and 70 family apartments and is one of the largest and most costly to be found in any city of Moline's population. Other local hotels together have regular facilities for the accommodation of 200 guests.

The city is well cared for in the matter of public utilities. Its power and gas supply and street railway and telephone service are not excelled anywhere. The power plants generating electricity both by steam and water for the entire tri-city district are located within its boundaries, as is the gas plant supplying the cities on the Illinois side of the river. The capacity of these is far beyond the normal needs of the community. At the close of 1922 there were in the city 182.6 miles of gas main, reduced to 3-inch equivalent, and 423.13 miles of single wire power distribution lines. The number of electric customers was 7,238 and of gas customers 6,940. The Tri-City Railway Company has two lines operating the full length of the city east and west and two north and south. There are three lines connecting with Rock Island, one with East Moline and one with Silvis. The combined mileage of tracks is 20.63.

In East Moline and Silvis there are 63.7 miles of gas mains and 280.41 miles of power distribution lines, with 2,671 electric customers and 1,593 gas customers. Total mileage of street railway tracks is 8.6.

There is but one telephone system, that of the Illinois Bell Company, with 5,700 stations in Moline and 1,100 in East Moline and Silvis.

The power, light, gas and telephone rates are the same as in Rock Island, being exceptionally low, and the street railway fare, also, is 10 cents, with the

privilege of riding for a nickel extended to those who purchase monthly identification cards, for which 50 cents is charged. The average fare collected under this plan is a little more than six cents.

Moline is served by the trunk line of the C. R. I. & P., the main north and south line and the Sterling branch of the C. B. & Q. and the Chicago-Kansas City line of the C. M. & St. P. It also has a belt line, the D. R. I. & N. W., connecting with Davenport, Rock Island, East Moline, Silvis and Carbon Cliff, and having a system of terminals and service tracks in the industrial district. The Milwaukee road uses its main line and the terminals. There are 50 trains in and out daily. In Moline and the two cities adjoining on the east there are 29 miles of main track and 111 miles of service and other tracks, the switch yards including the big division terminal of the C. R. I. & P. at Silvis.

Freight shipments in and out of Moline and East Moline run about 40,000 cars annually. In 1922, which was below normal, there were 15,032 carload lots received and 11,083 forwarded.

In the days when water transportation flourished Moline, by reason of the rapids and the water power development of its river front, was practically cut off from steamboat connections. In 1907, however, the government built a lock, and subsequent improvement of the rapids has given the city an exceptionally good slack water harbor through which all craft navigating the Mississippi at this point must pass. With railroads on the river bank and most of its big industrial plants within convenient reach, the city is bound to be a source of much business for river craft in the event of their revival. At this time the river is valuable mainly for the power it furnishes and for the possibilities of further development in this direction that it affords.

Supplementing its railroad and water shipping facilities is a system of improved highways which promises to play an equally prominent part in keeping Moline on the map. With one hard road to the east connecting with city pavement at Silvis completed at the close of 1922, state and county building programs already financed promised two more concrete highways in 1923. One of these was to be extended south, via Coal Valley, and the other northeast through the upper end of the county, paralleling Rock river. Two other routes, leading east and north, were to be improved with either concrete or gravel. Southwest the city has highway outlets through Rock Island and north and west through Davenport. Rock Island in late years has co-operated with Moline in laying out and improving through streets to facilitate exchange of motor vehicle traffic, and further plans in this direction are being considered. Interests of all the adjoining cities in this respect are looked after practically as well as if they were under a single municipal government.

Moline already has made material advances as a retail center, having three large department stores and many other prosperous concerns dealing

in the various lines of goods. Removal of the business district across the railroad tracks greatly aided its business revival. The city's commercial interests are looked after by several live organizations of business men. Completion of the road building program is expected to bring great benefits to retailers.

In banking resources the Plow City is keeping pace with its general growth. It has six banks, all in sound condition and with combined resources at the close of 1922 of $18,774,497. There are several imposing bank buildings, the home of the Moline Trust & Savings bank, completed in 1922, being one of the city's sky-scrapers. Steady growth in all departments has characterized the city's banking history. The following totals for all banks, taken from official statements made at three different times in the last decade, bear out this assertion:

	Capital Stock	Profits and Surplus	Loans and Investments	Deposits	Total Resources
Feb. 3, 1913---	$ 975,000	$433,625.60	$ 9 080,141.97	$10,135,732.65	$11,733,536.89
Mar. 4, 1919----	1,075,000	611,451.82	14,567,174.79	15,672.247.12	17,521,545.29
Dec. 29, 1922--	1,300,000	991,450.19	16,282,803.15	15,782,710.79	18,774,497.81

Nothing can better show the growth of Moline than the steady increase of its postal receipts during the last 30 years, which amounted to over 1,000 per cent. The following figures show the advance made in approximately 5-year periods since 1891:

1891	$ 24,433.28
1895	27,312.54
1900	43,385.66
1905	65,480.83
1910	126,350.43
1916	182,749.24
1920	272,546.75

Moline is an own-your-own-home city. At the last census there were 6,535 homes, and of these approximately 5,000 were occupied by their owners. This is a most exceptional showing. A larger percentage of the industrial workers own their own homes than in any other city in the country, it is said. The average value of these homes is high and they are well kept. The rolling character of the residence district gives scope for effective landscaping, and the opportunity has not been neglected. A score of costly residences established by founders of the city's large industries and their families crown the bluffs overlooking the Mississippi and Rock rivers and add materially to the natural beauty of the sky-line, viewed from either the north or the south. Growth of the residential section is mostly toward the south. More than a million dollars is spent normally each year on new homes. In 1922, which was below the average, 68 new residences were erected. The total expenditure, based on cost estimates given when building permits were issued, was $733,473. These estimates did not include plumbing, wiring, improvement of grounds, and other items, so that the sum actually spent was at least $1,000,000.

Population classification statistics of the 1920 census gave Moline 23,002 native white residents, 7,391 foreign born and 338 colored. The number of

dwellings was 6,535 and families 7,564. Sweden was the birthplace of 3,640 of the foreign born and Belgium of 1,615. From the earliest days the Swedish element has been prominent in the city, and this fact has been one of the most potent in connection with the industrial development of the community. The industry, thrift, sobriety and spirit of co-operation and high quality of citizenship of this class has profoundly affected the Plow City's destiny.

In East Moline, in 1920, there were 5,857 native white, 2,423 foreign born white, 409 negroes; 1,287 dwellings and 1,357 families. The Silvis classification showed 1,898 native born whites, 636 foreign born, 7 negroes, 517 dwellings, 605 families.

Moline has 13,000 registered voters and East Moline 3,000.

Organizations for business, fraternal, social, educational, recreational, patriotic and welfare purposes are numerous in Moline, East Moline and Silvis. The Moline and East Moline Chambers of Commerce have a large membership and are wide-awake. The Moline Woman's club is one of the strongest in the state. The city is headquarters of the Tri-City Manufacturers' association. Masons, Odd Fellows, Elks and Eagles are well established. There are many Swedish organizations and a number formed by Belgian-Americans. There is an Industrial hall, the home of the various labor organizations, and owned by the federated unions. Swedish Olive lodge of Odd Fellows has its own building, as have the Eagles, who also maintain a club house on Rock river which cost $50,000. The Elks also have a club house. The Moline Y. M. C. A., with a membership of 600, has a fine home and does a splendid work. The East Moline Y. M. C. A. also is well housed. Moline has a welfare association which extends its activities to East Moline in emergencies. The Red Cross Visiting Nurses' association serves all three of the cities, ministering to the sick and holding clinics for the promotion of modern methods of handling disease and caring for infants. Among cities of 25,000 to 50,000 population Moline ranks as one of the three lowest in the United States in infant mortality, with a rate of 35 per 1,000.

There is a Federation of Girls' Clubs with 22 affiliating organizations, a participating membership of 600 and a sustaining and associate membership of 400.

All three cities are liberal patrons of musical and dramatic entertainments and of the cinema. There are many fine theatres, the largest being the LeClaire, costing $300,000 and seating 2,000 people. Sports flourish, especially professional baseball, football, wrestling, boxing and bowling. Moline is a member of the Three-Eye Baseball league.

Public buildings in Moline include an imposing modern city hall, postoffice, library and city hospital. In Riverside cemetery there is a mausoleum, built at a cost of $100,000, containing 850 crypts, and the only building of the kind in the Tri-City community.

Perhaps the most imposing group of buildings in the vicinity is that of the Western Illinois Hospital for the Insane, better known as the Watertown hospital, located on a point of the bluff overlooking the Mississippi valley at the northeast corner of East Moline. Here, visible for miles down the valley, are 21 structures, mostly of stone and of striking architectural design. In addition to the grounds about the buildings, which are well wooded and beautifully parked, there is a farm cultivated mainly by inmates, and one of the show places of the locality. All told there are 590 acres of land in the tract and the valuation of the hospital property is $1,340,750. The number of patients cared for is about 1,700 and there are 320 employes.

East Moline was built primarily to take care of the needs of Moline industries, which a score of years ago found themselves without sufficient room for expansion. Incorporation as a village took place in 1903. Its growth was surprising. Four years later it became a city. It now has all the improvements and advantages of the average city of two or three times its age.

There are 2,396 acres, or 3.7 square miles, in East Moline. The area platted is 1,125 acres. The normal building rate is in keeping with the rapid increase of its population and industrial importance, though many of its shop workers are still drawn from Moline. Its residence district is attractive, especially that on the bluff, and there are many fine homes.

The city has 40 miles of streets, 13 miles of pavement, 15 miles of water mains, 17 miles of sanitary sewers, 3 miles of storm sewers, 18 miles of alleys and 31 miles of concrete sidewalks.

City property includes waterworks pumping plant, valued at $20,000, city hall, $40,000, and barns, $4,000. Pumping capacity of the water plant, which draws its supply from wells, is 750,000 gallons daily and the capacity of the standpipes, which are located on the bluff and furnish pressure, is 600,000 gallons. Average fire loss for the last decade has been less than $20,000. Plans are in hand for an extension of the fire department and for the building of a new library.

There are exceptionally fine schools in East Moline, with five grade buildings and a township high school. Enrollment in the grade schools in 1922 was 1,400 and in the high school 282. The high school maintains a uniformed band and orchestra. Value of school property is $229,590 and the bonded school indebtedness $97,500.

There are three growing banks in East Moline with total resources of $3,000,000 and total deposits of $2,250,000 at the close of 1922.

Receipts of the East Moline postoffice in 1922 were $28,230.44. In 1912 they were $10,000 and in 1917 $17,920, having nearly doubled in each five-year period.

Three parks, having a total acreage of 32, provide recreational centers. Each park has a playground, conducted by the Community Service Council. A country club is in course of construction and a nine-hole golf course is being laid out on a beautiful 110-acre tract, situated just south of the business district. The city is within 10 minutes by trolley of Campbell's island, which is much patronized by campers and week-end recreation parties during the summer months. Many residents also have summer homes on Rock river.

Silvis was founded in 1906 as a place of residence for workers in the repair shops of the Rock Island road. It was named after C. L. Silvis, who took a leading part in its inception. It was incorporated as a city in 1920. In 1910 the population was 1,163 and in 1920 more than double that number. Besides the railroad shops, Silvis has the general store of the entire Rock Island railroad system and receiving yards which are exceeded in size at but few points. Normally about two thousand men are employed in shops, storehouse and yards. Many of these reside in the adjoining cities, being transported to and from work by special shop train.

Silvis has three miles of paved streets, connecting with which is the first concrete highway to be built eastward from the Tri-City community. Its water supply is taken from artesian wells. Sewer and water mains cover the city. The sewer outlet is in Rock river. The city has two municipal parks and an automobile tourists' camp. It has just erected a $45,000 city hall.

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